

UMASS/AMHERST



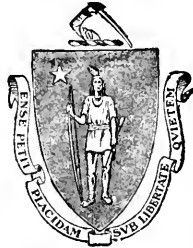
312066005159632

❁❁ The ❁❁
Connecticut
Pomological
Society

Proceedings of the
Fourteenth Annual
Meeting ❁❁ 1905

LIBRARY

OF THE



MASSACHUSETTS
AGRICULTURAL
COLLEGE

NO. _____ DATE 4 19 1913

SOURCE Conn. Pom. Soc.

SB

354

C8

1904-'05

PLATE I.



PROF. ALFRED G. GULLEY OF STORRS.
President Connecticut Pomological Society, 1903-1904.

REPORT
OF THE
Connecticut
Pomological Society
FOR THE YEAR 1904

WITH
PROCEEDINGS OF THE
FOURTEENTH ANNUAL
MEETING • • • 1905



EDITED BY THE SECRETARY.

PUBLISHED BY
THE CONNECTICUT POMOLOGICAL SOCIETY.
1905.

Officers of the Connecticut Pomological Society

FOR 1905.

President.

JOHN C. EDDY, Simsbury.

Vice-President.

JOSEPH H. PUTNAM, Litchfield.

Secretary.

HENRY C. C. MILES, Milford.

Treasurer.

ORRIN GILBERT, Middletown.

County Vice-Presidents.

Hartford—A. C. INNIS, Berlin.

New Haven—JOHN R. BARNES, Yalesville.

Fairfield—STEPHEN HOYT, New Canaan.

Litchfield—CHARLES L. GOLD, West Cornwall.

Middlesex—CHARLES E. LYMAN, Middlefield.

New London—W. S. THOMAS, Groton.

Windham—H. B. BUELL, Eastford.

Tolland—ANDREW KINGSBURY, Coventry.

Standing Committees.

Legislation.

J. H. HALE, South Glastonbury.

N. S. PLATT, New Haven.

J. M. HUBBARD, Middletown.

Finance.

L. C. ROOT, Farmington.

PROF. A. G. GULLEY, Storrs.

W. E. WALLER, Bridgeport.

Membership.

STANCLIFF HALE, South Glastonbury.

SHERMAN W. EDDY, Simsbury.

ORRIN GILBERT, Middletown.

Exhibitions.

ELBERT MANCHESTER, Bristol.

GEO. H. HALE, South Glastonbury.

E. R. BENNETT, Storrs.

Auditors.

G. W. STAPLES, Hartford.

Injurious Insects.

DR. W. E. BRITTON, New Haven.

CLARENCE H. SAVAGE, Storrs.

GEO. F. PLATT, Milford.

Fungous Diseases.

DR. G. P. CLINTON, New Haven.

E. M. IVES, Meriden.

LOUIS H. WARNCKE, Cannon.

New Fruits.

HARVEY JEWELL, Cromwell.

CHAS. J. ALLEN, Terryville.

GEO. W. SPICER, Deep River.

Markets and Transportation.

J. NORRIS BARNES, Yalesville.

A. N. FARNHAM, Westville.

CHAS. E. LYMAN, Middlefield.

A. B. PLANT, Branford.

CONTENTS.

PROCEEDINGS:	PAGE
President's Address	2
Secretary's Report	5
Report of the Membership Committee	14
Treasurer's Report	16
Report of Committee on Exhibitions	19
Report of Committee on Legislation	21
Report of Committee on Injurious Insects. Prof. W. E. Britton	27
Report of Committee on New Fruits	31
Report of Fungous Disease for 1904. Dr. G. P. Clinton..	34
Experiences of a Virginia Fruit Grower. S. L. Lupton...	38
A Few Thoughts on the Production and Marketing of Apples. T. E. Cross	57
Our Worst Apple Insects. Prof. W. E. Britton	79
Conditions and Methods in Nova Scotia Orchard. Ralph S. Eaton	91
Remarks of Visiting Delegates	108
The Trend of Present-Day Fruit-Growing. H. W. Collingwood	115
The San José Scale Problem	131
Experience of Controlling the San José Scale in New York State. Dr. E. P. Felt	132
The New Kerosene-Limoid Mixtures for Controlling the San José Scale. C. P. Close	147
Experiences of Connecticut Growers in Spraying for Scale.	164
Resolutions	179, 180, 184, 212, 216
Election of Officers	182
Money Making Ideas in Fruit Packages. J. H. Hale.....	187
Hints on Selling Our Fruit Crops to Better Advantage. S. L. Lupton	191
The Successful Culture of Berries and Vegetables. A. N. Farnham	203
The Successful Culture of Berries and Vegetables. A. E. Plant	208
Report of Special Committee on Fruit Exhibit with List of Awards	208
The Implement Exhibit with List of Exhibitors	222
A BRIEF RECORD OF FIELD MEETINGS, INSTITUTES AND EXHIBITIONS,	
1904	
Summer Field Meetings	224
Field Meeting at Charles E. Lyman Farm	225

	PAGE
Field Meeting at the Connecticut Agricultural College, August 10, 1904	227
Report of Institute Work of 1904	229
The Seventh Annual Fruit Exhibition, 1904.	233
 ADDITIONAL PAPERS PRESENTED AT THE ANNUAL MEETING.	
Fungicides and Insecticides. S. B. Hollister	238
How Domestic Varieties Originate. W. W. Ohlweiler....	240
The Classification of Apples. R. G. Tryon	242
Hotbeds. D. J. Miner	243
Grafting. J. H. Desmond	245
Germination of Seeds. C. J. Grant	248
Connecticut Fruits at the St. Louis Exposition	251
Some Notes on Apples at the St. Louis Exposition. G. C. Comstock	255
Necrology	258
 LIST OF MEMBERS	 260

Constitution and By-Laws of the Society.

CONSTITUTION.

ARTICLE I.—The name of this Association shall be THE CONNECTICUT POMOLOGICAL SOCIETY.

ARTICLE II.—Its object shall be the advancement of the science and art of pomology, and the mutual improvement and business advantage of its members.

ARTICLE III.—Any person may become a member of this Society by paying into the treasury the sum of one dollar per annum. If the annual fee remains unpaid for two years, the membership shall cease and the name be taken from the role.

ARTICLE IV.—Its officers shall consist of a President, First Vice-President, one Vice-President from each county in the State, a Secretary and a Treasurer, to be elected annually by ballot, to hold office for one year, or until their successors are duly elected.

The President, First Vice-President, Secretary and Treasurer shall constitute the Executive Committee of the Society.

ARTICLE V.—The Society shall hold its annual meeting during the month of February, the time and place to be decided by the Executive Committee, at which time the annual election of officers shall be held, various reports submitted and an exhibition and discussion of fruits take place; also other necessary business be transacted. Other meetings for special purposes may be arranged for and called by the Executive Committee whenever it is deemed advisable. Printed notice of each meeting to be sent to every member of this Society.

ARTICLE VI.—The following Standing Committees of three members each, on the following subjects, shall be appointed by the President, to hold during his term of office; the appointments to be announced at the annual meeting of the Society:

<i>Business and Legislation,</i>	<i>Fungous Diseases,</i>
<i>Membership,</i>	<i>New Fruits,</i>
<i>Exhibitions,</i>	<i>Markets and Transportation,</i>
<i>Injurious Insects,</i>	<i>Two Auditors.</i>

ARTICLE VII.—This Constitution may be amended by a vote of two-thirds of the members present at any annual meeting.

BY-LAWS.

ARTICLE I.—The President, Secretary, Treasurer and the chairman of each standing committee shall each present a report at the annual meeting of the Society.

ARTICLE II.—The President shall appoint annually two members to audit the accounts of the Secretary and Treasurer.

ARTICLE III.—The Treasurer shall pay out no money except on the written order of the President, countersigned by the Secretary.

ARTICLE IV.—It shall be the duty of the Executive Committee to arrange the programs for the meetings of the Society, to fill all vacancies which may occur in its offices between the annual meetings, and to have general management of the affairs of the Society.

ARTICLE V.—The Committee on Legislation shall inform themselves in regard to such laws as relate to the horticultural interests of the state, and bring the same to the attention of the society and also the need of further legislation. And when so directed by the Society, shall cause to be introduced into the General Assembly such bills as may be deemed necessary, and to aid or oppose any bills introduced by others, which directly or indirectly affect the interests of the fruit-grower.

ARTICLE VI.—The Committee on Membership, with the coöperation of the County Vice-Presidents, shall bring the work of the Society to the attention of fruit-growers throughout the state, and by such means as they deem best, strive to increase the membership.

ARTICLE VII.—The Committee on Exhibitions shall suggest from time to time such methods and improvements as may seem to them desirable in the conduct of the exhibitions of the Society, as well as fruit exhibitions throughout the state; and with the assistance of the Executive Committee shall arrange the premium lists, and have charge of all Exhibitions given by this Society.

ARTICLE VIII.—It shall be the duty of the Committees on Insects and Diseases to investigate in regard to the ravages of these enemies of fruit culture; and to suggest how best to combat them and prevent their spread; to answer all inquiries addressed to them by the members as far as possible, and, when necessary, promptly lay before the Society timely information on these subjects.

ARTICLE IX.—The Committee on New Fruits shall investigate and collect such information in relation to newly-introduced varieties of fruits as is possible, and report the same to the Society, with suggestions as to the value of the varieties for general cultivation.

ARTICLE X.—The Committee on Markets and Transportation shall inform themselves as to the best methods of placing fruit products upon the market, and bring to the attention of the members of the Society this and any other information concerning profitable marketing.

ARTICLE XI.—The Society will adopt the nomenclature of the American Pomological Society.

ARTICLE XII.—These By-Laws may be amended by a majority vote of the members present at any regular meeting.

C

THE
Connecticut
Pomological
Society

**Proceedings of the
14th Annual Meeting**

PURSUANT to the call of the Executive Committee and in accordance with the provisions of its Constitution, the Society convened for its fourteenth annual meeting February 1 and 2, 1905, in Unity Hall, Hartford.

The meeting was called to order at 10.30 o'clock Wednesday morning, February 1st, by the President, Prof. Alfred G. Gulley of Storrs.

The opening session was held under very favorable conditions as to weather, larger attendance of members and others, and a lively interest in the various reports, addresses and discussions. The hall was tastefully decorated for the occasion, the Society's banners with their unique mottoes being hung about the side walls, while over the president's chair was suspended an attractive sign bearing the suggestive words, "This Society wants 1,000 members in 1905. Will *you* be one of the thousand?"

A beautiful display of choice fruits with plants and cut flowers adorned the stage. In the exhibition hall below a splendid collection of apples and other fruits was shown in competition for the prizes offered by the Society, and in connection with the exhibit of implements made this room a center of interest throughout the meeting.

In opening the meeting, President Gulley said:

We have postponed our opening exercises a few moments so as to allow the people to collect. The weather has been a little inclement for getting in from the country towns, and the exhibits down stairs also have attracted considerable attention, so that it has delayed us a little.

The first thing I suppose is to follow the usual custom with an address from the chair.

President's Address.

Members and Friends of the Connecticut Pomological Society:

In compliance with the requirement of the by-laws of this society this address is respectfully submitted. In length, at least, I propose it shall be a model for my successors in office. We extend a hearty welcome to you all, and, in the exchange of experience and information which our sessions are sure to draw out, we are certain that you will return to your homes feeling refreshed and well repaid for the time devoted to the meeting.

While the present winter has not been a mild one, still, up to the time these words were written, it has not been one of extremes of temperature, and, as fruit trees generally went into the cold weather in good condition, there is as yet every probability of a full crop of fruit the coming year. The results of last season's severe weather fully demonstrated the necessity of choosing only the most valuable sites for at least the tender fruits. Perhaps never before has the importance of elevation and good air drainage been more perfectly illustrated. As a rule, orchards located between 250 and 650 feet above the sea level escaped severe injury, and in most cases bore fruit, which found a ready and profitable market. Those on the lower levels were seriously damaged, or killed outright. I might say this to you, that I was a good deal surprised that a good many of them came through in as good a condition as they did. Personally, I was very much afraid for a good many of the tender fruits, but I think in most every case they went through perfectly. I mean, of course, those that were on the higher levels. There are indications, though, that we have not yet learned the full extent of injury,

and may not for another year. This injury was not to peach trees alone. Many apple trees, which looked healthy early in the season, showed lack of vigor before the fruit ripened, and were not able to carry it to perfection of size and quality. The same thing was noticed in all the other fruits. Evidently the trees, while not visibly injured, were so weakened that when the additional tax of ripening a crop was added they could not meet it. The apple crop had some troubles peculiarly its own. It was very unevenly distributed over the state, and was not a large one, yet at selling time there seemed to be a very light demand. The impression prevailed that other sections had a large crop, and the price would be low. Added to this, the losses experienced the two previous seasons, while those who bought for cold storage seemed to put that class almost wholly out of the market. So many growers found it difficult to dispose of even a small crop. The scarcity and high price of barrels was another source of trouble, which resulted in much fruit going to waste. That is a difficulty that we ought to be able to overcome. It ought not to be possible for good marketable fruit to go to waste in Connecticut for the lack of barrels or packages in which to send to market. However, these difficulties combined caused many orchards to produce but light income, but those who secured their crop in good shape, and still hold it, have promise of their reward from growing demand and advance in price.

It is true that the export trade has taken only about half of last year's supply, but the western demand has used much more. Stored stocks proved to be lighter than estimated, and those still existing are rapidly decreasing. We do not think there can be much risk in holding apples if one dollar and a half per barrel can not be obtained when harvesting the crop.

In one direction the horticulturist has had cause to be thankful. That is in the remarkable freedom which has existed from the common insects and diseases during the past season. None of the usual pests were as numerous as we had reason to expect, and in some cases familiar diseases were conspicuous by their absence. Perhaps this benefit should

be credited to the winter so disastrous in other directions. The season has also been a very valuable one for the growth of trees and enabling them to largely recover from the severe aphid attack of the previous summer.

In accordance with arrangements made last year, this Society had charge of the Connecticut fruit exhibit at the Louisiana Purchase Exposition at St. Louis. Desirable space was secured, and about eight hundred square feet was occupied in the Horticulture Building. This was filled throughout the season with fresh fruits. The supply was kept up from cold storage from the 1903 crop, until July 15th, after which new fruit was forwarded, and later than September 15th only fruit of 1904 was used. With the exception of raspberries and blackberries, all fruits grown in the state were shown in their season. The display was a credit to the state, both in quantity and quality, even in comparison with the larger fruit states. Aside from showing our resources in this direction, and being able to compare the quality of Connecticut grown fruits with those grown in other states, perhaps the greatest value of the exhibit was the lesson taught as to the possibility of shipping even tender fruits long distances, when properly packed. Peaches and plums sent by ordinary express opened with little or no waste forty-eight to sixty hours after shipment and remained on the tables in good condition for nearly a week. Three gold medals were awarded to the exhibit, and several of other grades to individual exhibitors.

The annual exhibition of the society, held the past season in connection with the Rockville Fair, was fully as large and interesting as its predecessors. The quality of the exhibits improves each year with the experience of the exhibitors. To a large share of the people who attended that fair, such a display of fruit was a revelation. Many well informed people had no idea that such a collection had ever been or could be made in this state. As a means of education such exhibitions are well worth all the trouble and expense they entail. We must, however, hold them where the people will see them. The society has received a very hearty invitation to hold its next exhibition at Rockville again.

One trouble with the Rockville Fair was that there was such a crowd. There were several thousand there each day, and the result was there was a jam all the time. That exhibition, however, taught us this lesson, that it is possible and wise to hold the exhibitions where the people can see them. People, as a rule, take a good deal of interest in exhibitions of fine fruit, and we want to hold these exhibitions where as many as possible can have the advantage of them.

In conclusion, it is a pleasure to report that our society, as a whole, is in a healthy and prosperous condition. Its institutes have been a valuable means of spreading the information so helpful and necessary to successful agriculture. It has, however, much more work to do. Many portions of the state have already to feel its influence, and its resources will have to be increased to fully carry out the work which is demanded of the Society. We have faith that this will be forthcoming when a proper showing is made that it is needed. (Applause.)

The report of the Secretary, H. C. C. Miles, is next in order.

Secretary's Report.

SECRETARY MILES: Mr. President, and members of the Society: I sometimes think, in looking backward over the year's work of the society, that your secretary is very apt to feel that there are a good many matters which he should touch upon, which may not seem of very great importance to you, especially at the opening of the meeting, and I am very apt perhaps to make too long a report. I have written out a report covering the usual number of matters, and, since there are but very few matters which need your attention at this time, I will leave the reading of most of it until some later time, or you will all find it in print and can read for yourselves.

Mr. President and Fellow Members of the Pomological Society:

The annual gatherings of horticulturists are becoming more important every year, not only to those who attend them, but also because of their widespread influence upon the

fruit interests in general. Hardly a state in the union but what has its representative organization of growers and its Annual Horticultural Convention. They afford an opportunity of meeting with friends and fellow workers, and much valuable information is obtained from the addresses and discussions which are given by leading growers and scientific workers. Also, by coöperation in the business affairs of the Society, the members are able to obtain valuable aids to their trade in matters of markets, transportation, legislation, etc.

These statements apply with special force and truth to the annual meetings of this Society, which are anticipated with so much interest and pleasure by all fruit growing people of Connecticut. If, in its fourteen years of active life, the Society had accomplished nothing more than the bringing together, once a year, of all who grow and love fine fruits, binding them closer with a mutual interest in a mutual work, it would have fully justified all the expenditure of time and effort and money. But, as we all know, the organization has done *vastly more*, and may well feel proud of its record for practical, earnest and progressive work in behalf of the fruit growing interests of the state. A fact that should not be lost sight of is, that many young men and women who are to be the horticulturists of the next generation are joining the ranks of our Society and attending its meetings as a preparation for their life work.

This cannot help but be inspiring to those older leaders in pomology who have labored hard in building up the Society, and to whose unselfish efforts its success is largely due.

With the opening of the new year, 1905, those engaged in the culture of fruits in our state have reason to feel encouraged. After two most unfavorable seasons, the prospect for fruit crops the coming year is bright, and while climate and weather conditions are not yet within our control, still, with the help of organization and the experiment stations, and with better and with more exact knowledge at hand, such difficulties as the San José scale and other insect and disease pests are being overcome, and it is now possible to produce fine crops of fruit at profitable prices in every section of the

state. Indeed, we are only just beginning to appreciate Connecticut's possibilities in this direction, and, with the influence excited by this Society, the next few years should witness a large increase in the acreage devoted to fruits, especially apples and small fruits.

During the year just closed the work of our Society has gone steadily forward. The growth in strength and numbers has been healthy, though not as large as in some years, and our efforts have been extended over a wider field. In short, the good work of the organization is recognized and appreciated throughout the state. The first item upon which it is my duty to report is:

OUR MEMBERSHIP.

On February 1st, 1904, our total membership was 567. During the year we have enrolled 87 new members, making a total number of names on our list February 1st, 1905, of 654.

There have been seven deaths in our membership during the past year, and 68 members have failed to renew their memberships for the past two years, and, as this is the time-limit prescribed by our rules, we must drop them from the roll, which leaves us an actual membership to date of 581.

The gain for the year has not been as large as we could wish, in fact it is entirely too small, considering the strong efforts made by your officers and membership committee to increase the membership. That some who have been members should drop out from year to year is to be expected, but a loss of almost nine per cent. in one year is most unfortunate, and the subject should have our careful attention. Where many members neglect to renew their membership, it means a financial loss to the Society, which, at the present time, is severely felt. It is not much that the Society requires of each one of us, only a single dollar a year, but surely it is not too great an obligation to ask in return for what the Society gives. That which costs us something we usually appreciate the more.

To make the work of the Society so helpful and necessary that it shall appeal to every single member every year, is no

easy task, and yet does not our success largely depend upon doing this?

A certain way to cure any loss in membership, for the present at least, is to secure a big list of new names. Does anyone suppose that the limit has been reached in this respect? By no means. All that is necessary is for each present member to bring in at least one new name this year, and our aim of "*one thousand members in 1905*" will be easily accomplished. Let us try for it, for by so doing we shall benefit ourselves, and our friends as well.

FINANCES.

From February 1st, 1904, to February 1st, 1905, I have collected and paid over to the Treasurer, \$482.08.

From Membership fees	\$474.00
From proceeds of Annual Exhibition	8.08
	<hr/>
	\$482.08

I have drawn orders for the payment of bills to the amount of \$1,575.01. These expenditures are classified as follows:

Annual Meeting of 1904	\$230.45
Institute work	107.46
Secretary's Office—	
Salary for the year	\$100.00
Balance Salary for 1903	50.00
Office expenses and supplies	68.26—
	218.26
Annual Report	382.81
Annual Exhibition—	
Premiums	\$302.05
Express and sundry expenses	151.99—
	544.04
Field meetings	14.97
President's Office	4.76
Treasurer's Office	1.30
Miscellaneous, printing, postage, etc.	60.96
	<hr/>
Total	\$1575.01

OUR MEETINGS.

Besides the annual meeting in February, the Society held two summer field meetings, one at Mr. C. E. Lyman's farm, Middlefield, June 28th, and one at the Connecticut Agricul-

tural College, Storrs, August 10th. Also, the annual fall meeting and exhibition in connection with the Rockville Fair, September 27-29.

The field day at Mr. Lyman's was very successful and well attended, and all who were present were well repaid, for not often does one have the privilege of looking over so large and fine a farm. Mr. Lyman is a model farmer and his extensive peach and apple orchards, immense fields of grass and other crops, his sheep barns and dairy, present one of the best examples of successful business farming to be found in New England.

The visit to the Agricultural College in August was, as always, pleasant and profitable. While the unfavorable weather prevented the fullest enjoyment of the trip, yet the excellent progress being made in all of the college's various departments of work was noted with great satisfaction, and the close sympathy and acquaintance already existing between members of this Society and the institution was increased and strengthened.

We wish that more of our members would come forward with invitations to the Society to hold field meetings. No other feature of our work is productive of so much real benefit to the membership as these outdoor gatherings on the fruit farms of the state. They are informal and social, and we meet and exchange ideas under the pleasantest of conditions, and, whether the place be a large or small farm, the opportunity offered to study and learn from the growing tree or plant is unlimited. No winter meeting held within four walls can compare with the pleasures and profit to be derived from a successful Field Day.

A very flattering offer from the Rockville Fair Association Co. led the Executive Committee to arrange for the 7th Annual Fruit Exhibition of the Society with the Rockville Fair, September 27-29. As regards the amount of fruit displayed, the generally high standard of excellence of the exhibits, also the large attendance of members and the general public, the exhibition was as great a success as those of previous years. A total of 1,207 plates of fruit, 369 cans preserved fruits, jellies, etc., and 27 plates of nuts were shown

by 58 exhibitors. Premiums were awarded amounting to \$398.75, divided among 54 exhibitors. The exhibition formed one of the most attractive features of the fair, and its increasing value is attested by the fact that offers for next year are coming from several fair associations, and from Rockville again as well. Perhaps in no other way does the work of the Society attract public attention so favorably as through these annual exhibitions, and they are certainly worth all they cost for their educational influence, not alone upon the growers who participate, but upon every person who attends them.

Along the lines of Farmers' Institute work, this Society has taken a prominent part the past year. Since 1895 we have conducted institute meetings in various towns throughout the state each year, and we believe with most beneficial results. In 1904, under the "Consolidation Plan," with the State Board of Agriculture and the State Dairymen's Association, the Society took part in 20 institutes held in the towns of Collinsville, Southington, Danbury, Waterbury, Rockville, Trumbull, Wilton, Westfield, Coventry, Plainville, Clinton, Berlin, Cheshire, East Haddam, Winsted, New Canaan, Fairfield, Woodbridge, Danielson and Bethlehem. The entire series was very successful and could not help but result in arousing renewed interest and faith in the possibilities of Connecticut agriculture.

Owing to the peculiar conditions existing in our state, no system of institute work has yet been tried that exactly meets the demands of the times. Many are of the opinion that the organizations representing the different branches of agriculture can each carry on institute work in their own way and obtain the best results. For my part, I believe we shall not reach perfection in institute work until we establish a central system with a regularly appointed director in charge. But, whatever the system, it is certain that at present the funds available are not sufficient to carry on the work as its importance demands.

It is for this reason that our Society will ask the present general assembly for an increase in its appropriation, to be used chiefly for institute work. We are coming to recognize

more and more that "the institute is the farmer's school." It goes farther than even the Experiment Station or the Agricultural College. In fact, it is the medium through which the results of station and college work are brought directly to the farmer and in such shape that he may put the teachings into practice.

The present tendency is to devote the annual state meetings to the discussion of the important matters connected with the business end of farming, leaving to the institute and the smaller local gatherings the teaching and discussion of those details that enter into the production of the crop. This is as it should be, and is a wise economy of time and money. Probably not more than one-fourth of the farmers of our state can attend these state gatherings. For the larger number, therefore, the local institute is of the greatest importance. Then let us not cease our efforts until Connecticut shall have put in operation an institute system worthy to be compared with that of other states.

The Society's Annual Report of 166 pages was prepared and issued to the members in the spring. Like the preceding volumes, it was a book of great practical value and interest to every cultivator of fruits. Numerous requests for this publication come in from other states; thus the work of Connecticut fruit growers is known and honored over a wide area. Another line of work continued in 1904 was the gathering of figures for a fruit crop report, also statistics relating to the injury to orchard trees by winter-killing the previous winter. Such a census is of value for reference in future years and we believe should be continued annually.

In conclusion, a word in regard to the work of the Society in the year to come. This is a problem that should have our thoughtful attention, because no organization of this kind can live unless it earns the right to live. To begin with, we would do well to ask what lines of work need most to be done. In brief, the needs of the Society are the needs of the growers. The growers' needs, as we see them, are: First, a stronger belief in the possibilities of Connecticut as a fruit growing state, as a state in which to build pleasant homes surrounded

by every beautiful growing thing, whether its product be for use in the home or for sale in the market. Second, to understand the importance of selecting the fruits best adapted to our section and soil and climatic conditions, then to grow them to the highest perfection, to pack them honestly and according to the best business methods, and sell them on the best market at the proper time. We need to keep our fruit growing up to the highest standard and advertise our products, even more widely than do our competitors of the West and South and North; in short, make a reputation for Connecticut grown fruits. Third, we need to appreciate and take advantage of organization, which is one of the most remarkable features of the development of modern fruit growing; and whether it be co-operation among the farmers of a single neighborhood, or grange, the associations by counties or the larger state society like our own, be prompt to secure the benefits which invariably come to those who adapt themselves to the changing conditions of the times. How else can the fruit grower hope to succeed in these strenuous days?

Can anyone doubt but that it is the future work of our Society to encourage and help the growers to accomplish these things, and in so doing aid in developing the resources of the commonwealth.

We hear on all sides that the Pomological Society is doing a grand work, but let us not rest content until we have done better yet. Let us get close to our members and their needs as well as carry the gospel of growing and eating more and better fruit to those still outside the ranks.

In closing this report, I wish to thank all who have so kindly assisted me in the work of this office.

Respectfully submitted,

H. C. C. MILES, *Secretary.*

SECRETARY MILES: I want to say just a word further about our membership. I presume our membership committee in their report will speak of this matter, but in mentioning the membership committee I wish to say, in behalf of the officers, that I think we should pay a tribute to the work that

they have been doing. We have been in close touch with them in their efforts, and we know that they have given time, and money also, to help along this work, and what they have done has contributed very largely in building up the strength of our Society. I do not know that any changes in our rules could be made to cover this matter of getting in renewals of membership more promptly. Our members ought to realize the importance of this without any urging. It seems to me that the only way we have open to us at present is to make our work so good that each one will feel under obligations to stay in with us.

Possibly it might be thought best to adopt some such methods as they have in some other state societies. Many of you are familiar with what they do in other states. In New York state they have three classes of membership. They have one thing that we do not have, and that is a life membership for \$25.00. That point of a life membership may be something which we ought to look into and perhaps take hold of. It has been suggested by many of our members every year. I will leave this matter, hoping that it will be taken up by the membership committee.

I would like to call your attention to this point, however, the necessity of making the membership of the society one thousand during 1905. That should be the aim of the society to be reached this year. I think it can be done very easily if everyone will interest himself to bring in at least one new member.

THE PRESIDENT: Is there anything to be said in regard to the secretary's report? If there is nothing further, the report will be accepted and printed in the proceedings.

We will now hear the report of the Treasurer, Mr. R. A. Moore.

SECRETARY MILES: For some reason or other, Mr. President, he does not seem to be here. I met with Mr. Moore last Saturday and we went over the books of the Society together. I know that he intended to be here this morning. He does not seem to be here now, but I presume he will be later.

THE PRESIDENT: If Mr. Moore is not here, I will ask Mr. Orrin Gilbert, the chairman of the membership committee, to come forward and give his report.

Report of the Membership Committee.

MR. GILBERT: Mr. President, and ladies and gentlemen of the Pomological Society:

I would say that, after the very full report of the secretary, it would not seem to be necessary to call upon me at all.

Now, we have had but a small opportunity this past year to meet the members, or to meet those whom we wanted to get into the Society, because we have had only two field meetings. The result has been that we have not obtained as many new members as we hoped to do this year. I have been thinking about the matter and wondering how we might best meet this emergency in regard to the membership business, and I have thought of a plan which is this: For each one, when he pays his membership fee to-day, to hand in two dollars, instead of one, and we will give him a receipt for one dollar, and he may pledge himself to look for one new member, and, when he gets that new member, just simply send the name and the address in to Secretary Miles, and he can keep the other dollar that he receives. I do not know of any better suggestion to make than that. I think it would work well. I think if the members took hold of a scheme like that, the thousand new members that the Society wants this next year would be obtained in less than a year.

I do not know what more I can say, Mr. President. That is about all I have to suggest.

THE PRESIDENT: You hear the report of the membership committee. Any remarks upon it?

MR. HALE: I think if anybody can do that job, and do it well, it is the chairman of the membership committee, and I move, Mr. President, that he be authorized to get two dollars out of every member, if he can. (Laughter.)

THE PRESIDENT: Last week I attended the meeting of the Western New York Horticultural Society, where they were

talking about this very same question of membership. One of the things that they tried to spring was to double the fee, making it two dollars, instead of one. They got to talking about it pretty seriously the last day of the meeting, and they decided that they would put it the other end to. They decided that they would let each fellow bring in two members. And they asked how many there were that were willing to pledge themselves to do that, and there were more than one hundred that got right up there and then and promised to do it. They raised over six hundred members right there in that room, in the two days, and over a hundred arose and pledged themselves to put in an extra member, and to do all they could to help push the membership up to a thousand this next year.

MR. HALE: Mr. President, the impression might go out, from what our officers have said, that there was some trouble in the Pomological Society about getting members. Of course, we all know that that is not the fact. There is no state in the Union, according to its population, that has a pomological society as big as the Connecticut Pomological Society, with its 580 odd paid members. We want more, but we can not afford to have the impression go abroad that there is any trouble. The great Western New York society, that has been in existence for fifty years, and located in the center of the greatest fruit growing region in America, has not a membership as large in proportion to population, even though they have been at work for fifty years, as this organization here in Connecticut, which has only been in existence fourteen years. We are better off by a good deal in point of membership, in proportion to population. I say this, Mr. President, because I do not want to have any stories go out that there is any trouble about our membership. We do not want to have the newspapers print any stories to the effect that there is any lack of interest about the matter of membership.

THE PRESIDENT: That is the fact, just as Mr. Hale states it. There is no state in the Union that has got as large a number of members in its pomological society, in proportion to the population of the state, as Connecticut. Some of the

large western states have not got so many members in their societies.

SECRETARY MILES: Mr. President, I do not want to prolong this discussion on membership matters, but I do feel like saying a word so as to correct any wrong impression that the members themselves might get from what Mr. Hale has said. That statement that he made about our membership will bear looking into a little deeper. While we have 581 members on the roll, there are at least 150 of those members whose dues are unpaid for 1904. Under the rules, we have to carry them on our rolls for two years, but if they do not pay up we have to drop them at the end of that time. I presume there will be many of them that will pay up, but there is quite a loss most every year, because those who have joined this Society do not always remember to continue their membership.

MR. HALE: Well, Mr. President, in spite of that we still have one of the biggest memberships in the country. I will call it 450, and even then we have got more in Connecticut than in any other state, in proportion to population.

SECRETARY MILES: The problem which your officers run up against is not so much how to get new members, as it is to get all the new ones that we obtain to remain active members of the Society year after year.

THE PRESIDENT: Mr. Moore is here now, and I will call for his report as treasurer.

MR. R. A. MOORE: Burglars attempted to blow up a safe on me at the post office last night, so I had to do some telegraphing and telephoning before I could come here this morning. That has made me a little late.

Treasurer's Report.

FOR THE YEAR ENDING FEBRUARY 1ST, 1905.

1904.		<i>Receipts.</i>	
Feb.	1.	To Balance from last report	\$ 58.84
	2.	Cash from A. G. Gulley	1.00
		Cash from H. C. C. Miles, sec'y, Membership fees,	186.00
	3.	Cash from H. C. C. Miles, sec'y, Membership fees,	92.00
	25.	Cash from H. C. C. Miles, sec'y, Membership fees,	33.00
Apr.	7.	Cash from H. C. C. Miles, sec'y, Membership fees,	39.00

PLATE II.



ROSWELL A. MOORE, KENSINGTON, CONN.

For twelve years the efficient Treasurer of the Connecticut Pomological Society.

Sept. 26.	Cash from H. C. C. Miles, Sec'y, membership fees,	\$ 30.00
Oct. 3.	from H. C. C. Miles, Sec'y, membership fees,	22.00
Sept. 29.	Sales of Fruit (exhibition)	8.08
Nov. 17.	from Comptroller (State appropriation) ...	500.16
	from H. C. C. Miles	7.37
Sept. 7.	from O. Gilbert (loan)	100.00
July 5.	from H. C. C. Miles, Sec'y, membership fees,	35.00
Dec. 21.	from H. C. C. Miles	2.00
23.	from Comptroller (State appropriation) ...	302.05
1905.	from Sec'y Board of Agriculture*	141.70
Jan. 30.	from H. C. C. Miles, Sec'y, membership fees,	29.00
		<hr/>
		\$1,743.20

1904. *Expenditures.*

Feb. 3.	By Cash to R. H. Race	\$ 12.50
	E. R. Bennett	1.58
13.	Milford Post Office	10.03
	George C. Comstock	4.00
	By Check to The Whitehead & Hoag Co.	12.30
	New Dom Hotel	29.00
	F. A. Waugh	3.75
	C. H. Ryder	10.50
	The Tuttle Morehouse & Taylor Co.	6.25
	Wm. Francis	60.00
	H. C. C. Miles,	27.46
	A. G. Gulley	4.76
18.	N. P. Daniels	19.00
	Paul Thompson	2.00
24.	Mortimer Whitehead	30.00
Mar. 2.	H. C. C. Miles (Balance salary 1903) ...	50.00
8.	Mortimer Whitehead (3 checks)	13.67
15.	B. H. Walden	7.31
26.	A. G. Gulley	21.54
	Mellen & Hewes	3.00
Apr. 8.	Milford Post Office	5.34
May 12.	Geo. W. Brackett	21.00
	H. P. Daniels	6.25
June 17.	Miss E. G. Fowler	14.00
July 30.	The W. W. Wheeler Co.	32.97
	J. R. Clark	23.73
	H. C. C. Miles	19.43
Aug. 31.	H. C. C. Miles	16.50
July 19.	E. M. Ives	11.44
	Kilborn Bros.	4.35
	A. G. Gulley	7.58

*Bounty on Fair Premiums.

July 19.	By check to Edwin Hoyt	\$ 4.00
	Samuel Knight	2.50
	The Whitcomb Press	1.10
Oct. 3.	Geo. C. Comstock.....	11.00
	T. E. Cross	11.00
	L. C. Root	11.66
	E. Tucker's Sons	2.31
	J. M. Hubbard	7.60
	Laning Co.	5.00
	Clarence H. Ryder	12.00
	Adams Express Company	9.45
Nov. 22.	The Tuttle, Morehouse & Taylor Co. ...	303.65
	The Mellen & Hewes Co.	21.60
	H. C. C. Miles	17.95
	J. R. Clark	42.40
	A. G. Gulley	4.60
	G. P. Clinton	5.19
	The Whitcomb Press	3.25
	H. C. C. Miles	28.43
	H. C. C. Miles (salary 1904)	50.00
	R. A. Moore	24.14
	W. W. Ohl Wieler	5.79
	E. R. Bennett	10.53
	The Whitcomb Press	9.00
	The Case, Lockwood & Brainard Co.	2.00
1905.		
Jan. 12.	H. C. C. Miles, office expenses	25.52
30.	O. Gilbert (loan)	100.00
	H. C. C. Miles (salary)	50.00
		<hr/>
		\$1,272.96
	Premiums paid—Rockville Exhibition ..	302.05
		<hr/>
		\$1,665.01

SUMMARY.

Receipts	\$1,743.20
----------------	------------

Expenditures.

Miscellaneous Expenses	\$1,272.96
Premiums	302.05
Balance in Treasury	78.19
	<hr/>
	\$1,743.20

Due on account State Appropriation	\$ 47.79
Available Funds	125.98
Amount of Permanent Fund (Jan. 1, 1905,) on interest at Berlin Savings Bank	54.66

AUDITORS' CERTIFICATE.

HARTFORD, CONN, Feb. 1, 1905.

We have examined the accounts and vouchers of the Treasurer, Mr. R. A. Moore, and find them correct.

GEO. W. STAPLES,
ALBERT B. PLANT,
Auditing Committee.

THE PRESIDENT: Gentlemen, you have heard the report of the treasurer. If there is no objection, it will be received and published in the proceedings.

I will now call for the report of the committee on exhibitions held during the last year. Mr. Manchester, who is the chairman of that committee, I understand can not be present, so the report will be given by Mr. E. R. Bennett, of the committee.

Report of Committee on Exhibitions.

MR. BENNETT: Mr. President, up to yesterday I supposed that Mr. Manchester would be able to be here to make this report, and consequently I have not much of a report to present, excepting as to the number of plates of various kinds of fruit that we had at the Rockville Exhibition. As to the other exhibitions, I have no report at all to make.

At the Rockville Fair, as a good many of you know, there was a pretty good exhibition of different kinds of fruit. Of apples, single plates, there were 337, and with the different collections made a total of 725, the total number of plates without counting the canned goods and the fruits put up in glass. Of the canned fruits there were 192, that is, of the various kinds of fruits, and of pickles, jellies, etc., 177. Plums, 55 plates; peaches, 133 plates; quinces, 6 plates; grapes, 133 plates; pears, 161 plates; nuts, 27 plates. Making a grand total of 1,234 plates.

I have no particular recommendations to make, but one thing I noticed in the judging of the fruit and which I should like to recommend to the members of the Society, inasmuch as one of the objects of our association is to raise the standard of fruits, and that is, that the association make it clearly

understood that nobody should be allowed to exhibit any fruit that shows any signs of the San José scale, or of the Codling moth, apple scab, or any other disease. There were a good many plates shown at Rockville that had these troubles; I noticed some San José scale, and quite a good deal of scab, and a whole lot of fruit that showed signs of the work of the Codling moth. Of course, these same defects were not very noticeable, but I think that they should be thrown out, and, so far as we can, only allow *perfect fruit*, or as nearly perfect as we can, to be exhibited. I think it should be understood beforehand that the exhibitors should not be allowed to show any such class of fruit, and then they will not be disappointed when their exhibits are thrown out on account of these diseases. I think that is all we have to report.

MR. HALE: Mr. President, I am in hearty accord with that suggestion, but I just want to make one other suggestion. I agree with all that has been said, but I have noticed at fairs many times that the judges do not take into account the bruises on the apples. They are too much inclined, many times, to regard an apple as perfect, and not to take into consideration, as much as they ought to, bruises and blemishes of that kind. I think bruises should count just as much against fruit, as where it shows evidence of fungous disease or insect troubles, because the bruise shows that the man who packed it did not pack it properly. When fruit is put on exhibition in a bruised condition it shows carelessness in the handling somewhere. A man may say, "I packed it as well as I knew how," but the trouble is that fruit that is accepted in such a condition as that, shows that the man who packed it doesn't know how, and that is just what we are aiming at, to make him learn how to exhibit perfect fruit. I think the judge should take bruises into account just as much as he would insect troubles or blemishes of any other kind. I think they ought to be included, and that it should be understood that such things are to count in making the awards.

THE PRESIDENT: I think that is a very good suggestion. I had several come to me at Rockville and they wanted to know why they had not been recognized on single plates,

because, so far as they could see, they thought their fruit was just as good and up to just as high a standard as some others in the same class that had received a premium. I believe that the trouble was accounted for because of the blemishes on the fruit, and it was ordinarily due to the blemishes caused by insect pests, and not especially to bruises. That is a thing that we are trying to accomplish; not to exhibit fruit that shows any blemishes whatever.

I notice that I omitted to call for the report of the treasurer in regard to the permanent funds of the Society. I will call for that now.

TREASURER MOORE: Mr. President, there is a permanent fund. I should have mentioned that before. There have been two contributions made to this fund of \$25.00 each, so that there is now in the savings bank at Berlin, including accrued interest, \$54.66 to the credit of the Society on account of its permanent fund.

THE PRESIDENT: That is, of the permanent funds, which are not to be used for ordinary expenses?

MR. MOORE: Yes, and with the interest added.

THE PRESIDENT: I will now call for the report of the committee on legislation, Mr. J. C. Eddy, chairman.

Report of Committee on Legislation.

Mr. President, and Members of the Pomological Society:

There is just one matter that your committee wishes to bring before the Society at this time. As is generally known by members, the Society has received one thousand dollars per year from the state to promote the interests of pomology. This is not an annual appropriation, but has been granted at each session of the legislature, a bill being put in at each session for that purpose. It is thought by our officers and many of our members that a larger appropriation is necessary to carry on the work of promoting the interests of fruit growing, and that in view of the benefits to the whole state we are justified in asking for an increase of five hundred dollars, or fifteen hundred dollars per year. If this action is authorized by the Society, your committee proposes

to present to the legislature a bill asking for an annual appropriation of that amount, so that in future it will not have to be brought up at each session of the legislature.

THE PRESIDENT: Gentlemen, you have heard the report and recommendations by the chairman of the committee on legislation. What will you do with it? I think it will need some action as to whether the Society had better go before the legislature and ask for an increase in its appropriation. It is certain that we can use it. It will all be useful in institute work. That is the idea in asking for this extra five hundred dollars—to use it in institute work. Last year we devoted over \$100.00, but it was in partnership with other organizations, and it has been thought that if we could secure an increase, that very much more work could be done, and undoubtedly the state would receive a good deal more for the investment. There is no doubt at all but what this money would be well invested by the state. I should like to hear what Mr. N. S. Platt has to say about this matter, or if he has any suggestions to make.

MR. PLATT: Mr. President, I do not care just at this moment to make any motion in this matter. I know, however, that there is some feeling in the state that would be against an increase in our appropriation, a feeling that it is a sort of class legislation, but how much that would affect the matter I do not know. Our Society could use, and would like to use, fifteen hundred dollars a year, if it can be secured, in the same way we secured the appropriation a few years ago, and I think we ought to try to get it in the way our committee proposes. That is about the condition I am in so far as I have thought about the matter.

MR. KELSEY: Mr. President, I think this organization ought to take into consideration the fact that the State institute work has been growing very rapidly in most of our sister states, and more rapidly than it has been in Connecticut, I am sure. In those states the appropriations for that purpose have been doubled and doubled, and then trebled, year after year, and it seems to me that the state of Connecticut ought to be willing to do something to keep up with the procession. Money has been appropriated year after year in

other states, the amounts frequently increased, and it has all come back in good round hundred per cent. profit to the state, and the people that have paid the bill have been well pleased.

Perhaps it is not wise to make this extra demand upon our legislature, but I believe it is wise to show our colors and to fight for it whether we are turned down or not.

I think we are fortunate in that we have several members of our Society who are members of the legislature, and it seems to me that they can do something in this matter. It seems to me it would be well to have them interested in it, and I think it would be well for our officers to consult with them.

SECRETARY MILES: Mr. President, in order to bring this matter before us in proper shape, I will move that the report of the committee on legislation be accepted, the recommendations adopted and the committee requested to follow out those recommendations. (Motion seconded.)

THE PRESIDENT: It is moved and supported that the report of our committee on legislation be accepted and its recommendations adopted. Are you ready for the question?

MR. J. M. HUBBARD: Mr. President, I should like to say just a word on that before you put the motion. I have been a little in doubt what course would be best for us to take, because I have anticipated that a bill would be presented before the legislature for organizing our institute work in an effective form. It has not seemed to me that our institute work should be left as it has been for three or four years, to be carried on by several different societies, but should be organized and worked in accordance with the plans suggested in the report of our secretary. I will second this motion in order to bring it up, but I am still under the impression that we would have a better chance of securing the appropriation by having the institute work organized under a director or conductor, in a way that compares with the work in other states where it has been so successful. We need the work. The work ought to be done. It would pay. And we need to have a fair share of whatever money is spent for institute work directed to the interest which this Society represents, but whether it is best for each society to go to the legislature

and ask for an increased appropriation, or best for a measure to be presented for a more effective organization of the institute work itself, is a matter upon which I am somewhat in doubt. At the present time I am rather inclined to favor the idea of putting our institute work in charge of a director, who shall organize it and carry it on as it should be. I do not know about this, and, as I say, I am somewhat in doubt as to just what is the best course to pursue. One thing is clear in this matter of going to the legislature for money, and that is, that every society in the state is going there. And that is not only true about every agricultural society, but every institution is going to the legislature for more money. They are not all of them going to get it. Some of them have strong claims, and you must make out an exceedingly strong case in order to get an appropriation in the face of this universal demand for money. The question now is, can we make the strongest case by going before the legislature and simply representing the interests of this Society on the line of institute work, or can we make the strongest case by going in as a part of a general agricultural department, thoroughly organized and placed under efficient management, and asking for an adequate appropriation to carry on the instituted work for increased agricultural education. That is the question.

THE PRESIDENT: My understanding of this matter is that so far as that idea is concerned, it has not been sufficiently developed, and the kindred associations have all made their plea for this appropriation, or, if they have not already done so, the other ones will do so besides our own. Of course, as Mr. Platt says, they are all asking for money, and what the outcome will be, of course, can not be told at this time. Are there any other remarks?

MR. HALE: Mr. President, I want to say just a word. The question before us is just simply this, Mr. President. Do we want to work simply for the Pomological Society, or do we want to work for the general agricultural interests of Connecticut? It is plain, and we all know it at the present time, that we have a State Board of Agriculture, which originally had an appropriation of twenty-five hundred dollars a year, and which some years ago got, as a special appropria-

tion, an increase of a thousand dollars for institute work. But the fact is, it has not spent this money for institute work. Then we have the Dairymen's Association, an association specially organized for advancing the dairy interests of the state, and a splendid organization it is, too. It is doing a great deal of good work. Then we have the Pomological Society, which has a splendid membership for a state the size of Connecticut, which has more largely attended meetings than any other agricultural interests in the state. Now, if I were the State of Connecticut, Mr. Chairman, sitting over there at the capitol, and with half a dozen interests and different societies coming over there and asking for money, I should begin to think pretty seriously about putting them all into one bureau with an efficient head to manage the whole thing and to direct the expenditure of money. It seems to me that that would be the wise thing to do. It is what we will have to come to sooner or later. Besides all that, Mr. Chairman, the legislature is being asked for appropriations for the Agricultural College, and for the experiment stations at two different places, and the result is we are scattering the agricultural money in a dozen ways and spending it for a dozen different kinds of purposes, although it is really in the end all for the advancement of the agricultural interests of the state. But there is no question about it, Mr. Chairman, some of this work duplicates the other, and it ought not to be carried on that way. I think the Pomological Society has accomplished more good for less money in the state of Connecticut than any organization that is now in the field working for the improvement of our agricultural interests, and I think if it had four times as much money, under the present management, that the state would get more for the money than with any other. I think if we go there and ask for what we need for carrying on the work of the Pomological Society, we will get it, because we ought to get it. If we go there because we want to run some more institutes for the education of our farmers, or because we want to double up with somebody, I think they will double it for us, just as they ought to. The legislature has usually been inclined to treat the agricultural interests pretty fairly.

MR. FENN: Mr. President, in conversation with one of the members of the present legislature, he said that the amount of the appropriations that were being asked for this year, if granted, would probably result in a renewal of the state tax. He thought that anything that the farmers might ask for would be cut out. How true that is I do not know. Many of you who have followed up the proceedings of the legislature know that immense appropriations are being asked for, and, should it be likely to result in the state tax being revived again, he doubted very much whether you will get very much money, even though you ask for it. He took that view.

MR. HALE: Mr. President, if anything of that kind will bring the state tax back onto the statute books of this state, then, I say, let us have it. We have been getting a lot of money, to run the state, out of the corporations and throwing it away recklessly. That state tax bogie doesn't scare me a little bit. It isn't such a bad thing as some people think.

MR. FENN: I see by the roll that there are ninety-seven farmers in the legislature. They ought to be able to do something.

MR. HALE: That, sometimes, is more of a disadvantage than it is an advantage. My experience shows, Mr. President, that they will hold together on everything but *agricultural* legislation.

MR. FENN: I think that criticism, to a certain extent, is true. Every agricultural appropriation that has been asked for has been obtained by the aid of the lawyers and members who are not farmers, more than it has by the farmers themselves. That is one trouble. They can not be depended on.

SECRETARY MILES: Mr. Chairman, I want to say just a word in connection with this matter, because I have given the matter some thought. It seems to me it is a little too late at this session of the legislature to attempt the plan which Mr. Hubbard and Mr. Hale have suggested, and, if that is the case, then I think we should press for this increased appropriation. Many of us believe that that is the best course for us to take. I am told that the Dairymen's Association is asking for an increase for institute work. I believe they will be likely to get it, and it seems to me the Pomological Society

should take the same course, or else in the next two years we shall find our funds will be entirely inadequate to carry on the work which will confront us.

THE PRESIDENT: I do not think we can give any more time to this now, and I will put the question. All those in favor of adopting the recommendations as made by the legislative committee will signify it by saying "aye." All those opposed "no." The motion is carried, and the committee will be governed accordingly.

We will now hear the report of the Committee on Injurious Insects.

Report of Committee on Injurious Insects.

BY PROF. W. E. BRITTON, New Haven,
State Entomologist.

The severe winter of 1903-1904 was destructive to certain forms of insect life. San José scale was greatly checked in some parts of the state. In our spraying tests we examined many thousands of individuals and in most cases more than half had been killed by the winter. But trees were badly injured, and in many orchards the scale-infested trees went into the winter in a weakened condition to be killed by the freeze. Frequently one or two branches on a tree would be coated with scales while the remaining portion of the tree would be comparatively free from scale. Such infested branches were killed almost without exception even where the others were not seriously injured, though in some portions of the state many infested trees were injured or killed outright.

Over 100,000 trees were sprayed in Connecticut with the lime and sulphur mixture during 1904. The results were generally satisfactory, and in some of the orchards where the work was done with thoroughness it was hard to find living scales late in the season. In other cases, however, on account of climatic conditions or the mixture not being well made or carefully applied, scales were afterward abundant.

We may feel gratified at the results of using the mixtures prepared without artificial boiling. Last year it was stated

in this meeting that sulphide of sodium seemed a promising material and was cheap enough so that it could be used extensively. At that time, however, it could be obtained only in large solid masses which could not be dissolved without first breaking or crushing them. I wish to announce here that it is now on the market broken into small lumps which will dissolve more readily. It can be obtained from the Roessler & Hasslacher Chemical Co., No. 100 William street, New York, in iron drums containing 110 pounds each, at $3\frac{1}{2}$ cents per pound. From 8 to 10 pounds of this sodium sulphide, with the same weight of sulphur and 20 pounds of fresh stone lime and 40 gallons of water, a very good mixture can be made without artificial boiling.

The mixture of lime, sulphur and caustic soda is effective and can be made without boiling. One of these mixtures should be used on small trees in the garden, or where the orchard is too small to warrant the use of a cooking plant. The boiled mixture is fully as good, however, and is probably cheaper where made in large quantities.

The plum curculio *Conotrachelus nenuphar* Hbst. was unusually abundant and attacked not only plums, cherries and peaches, but caused much injury to apples. The crescent-shaped marks were seen on many of the small apples in June. Some of these dropped, but most of them remained on the trees, becoming irregular in shape with hard streaks or knots running through the flesh. The apple curculio *Anthonomus quadrigibbus* Say. has been supposed to carry this injury, but it is a rather rare insect—at least when compared with the plum curculio. The punctures in the young apples are made by the adult beetles of both sexes for food, and earlier the young leaves and flowers are eaten for the same purpose. In addition to the food supply, the females deposit eggs and cut crescent marks around them, to prevent their being injured by a too rapid growth of the fruit. There is but one brood of beetles each year and the winter is passed in the adult stage. Professor J. M. Stedman of the Missouri Experiment Station has recently published a bulletin on his studies of the plum curculio injuries to apples. He concludes that spraying with the arsenical poisons, as is done for the Codling

moth, will partially control the plum curculio. If, in addition to this treatment, we can stir the soil or cultivate under the apple trees, once about July 15th, again about August 1st, and the third time about August 15th, the disastrous results may largely be prevented. All infested apples which drop should be destroyed every seven days.

Professor S. A. Forbes, State Entomologist of Illinois, has also conducted spraying experiments with arsenate of lead against this insect in apple orchards. While the fruit could be greatly improved by the treatment, a certain percentage of injured apples (about 28 per cent.) always remained, even where thoroughly sprayed. He tried to account for this percentage by considering it the amount that must be attacked by the curculios before they could get enough poison to kill them. In other words, it is necessary for them to do some eating before they become poisoned, and in so doing they injure nearly 28 per cent. of the fruit.

The codling moth *Carpocapsa pomonella* Linn. was fully as abundant as usual, but this insect may be controlled by a proper spraying with arsenical poisons after the blossoms drop.

The apple maggot *Rhagoletis (Trypeta) pomonella* Walsh. is on the increase in Connecticut, and no practical remedies have yet been discovered. Destroying the fallen and infested fruit is about the only thing that we can do, and this merely reduces the number of adults for the following season.

The apple aphid *Aphis pomi* DeGeer was fortunately not injurious during the season. Eggs are now to be found on the twigs and we may expect to have more of them next season.

In October, the strawberry root borer *Typhophorus cancellus* Fabr. destroyed two acres of strawberries at South Manchester. This insect feeds on the roots of the plants in its larval stage, and is usually worse in old fields. The adult beetles also feed upon the leaves, appearing late in summer. Strong mixtures of arsenate of lead or Paris green sprayed upon the foliage is about the only remedy.

From rather limited observations on pear trees sprayed with the lime and sulphur mixtures, the pear psylla, *Psylla*

pyricola Forst., has apparently been held in check by the treatment.

The tent-caterpillar *Malacosoma (Clisiocampa) Americana* Fabr. has been rather abundant, though perhaps less so, on the whole, than last year. The fall web worm *Hyphantria cunea* Dru. was found throughout the state in late summer. Proof was obtained that this insect is partially double-brooded at New Haven.

I wish to call your attention to a maggot which is infesting currants in some parts of the state. Several samples have been received, but too late, as the insects had escaped. This may prove to be the currant and gooseberry fruit fly *Epochra canadensis* Loew, which has caused considerable damage to the crop in some parts of the country. I would be glad to have every member of the Society on the watch for this species next season and to send me specimens and notes. We will try and find out what insect causes the mischief.

In the report of this committee last year, attention was directed to the fact that our state law is regarded as unconstitutional by the legal committee of the American Nurserymen's Association, because it requires outside nurserymen to fumigate, when it does not require it of the Connecticut nurserymen. In case our legislative committee think it best to make a change in the law to cover the points in question, I shall be glad to confer with them. It is thought by many that our nurserymen should be compelled to fumigate with hydrocyanic acid gas before sending out their stock. This is already practiced in the larger nurseries and would affect chiefly the small dealer who digs up a plant or two at a time.

Respectfully submitted,

W. E. BRITTON, New Haven, *Chairman*,

H. B. BUELL, Eastford,

THEO. M. SAVAGE, Berlin,

Committee on Injurious Insects.

THE PRESIDENT: This report will be received and printed with the proceedings.

We will next have the report of the Committee on New Fruits, by Stancliff Hale, South Glastonbury.

Report of Committee on New Fruits.

Mr. President, and ladies and gentlemen: Your committee has had rather poor success in getting material for a report which will be of very much value in giving any information as to New Fruits. On account of the extreme cold during the last winter, many new varieties failed to fruit, which made it impossible to take notes. I have written several members, and also to some of the leading growers, and the general consensus of opinion seemed to be that very few new varieties had fruited this past season.

I had a particularly good opportunity to study strawberries last season, as we had a test plot of a great many new and old varieties, and I am able to give you the results of my observations on some of these.

Auto; this is a perfect flowering strawberry, ripens about June 16th, large, firm, good flavor, strong plants, fairly prolific, and has a good, solid flesh.

Challenge; perfect flowering, comes in about June 12th, bright red in color, firm, red flesh, is slightly conical, rather medium size, good flavor, and very productive variety. It is a pretty good variety.

Climax; perfect flowering, ripens about June 10th, a fine grower, prolific, large for its season, fine flavor, in a good season, and has a deep red color.

Connecticut; perfect flower, ripens about June 16th, large, deep red in color, particularly fine flavor, a good grower, and quite prolific.

The Fairfield; perfect flower, ripens about June 14th, rather weak foliage, good quality, bright red in color, fair size, and firm and solid in fruit.

Kansas; imperfect bloom, ripens about the middle of June, deep red in color, a shy bearer, a rank strong grower, covers a long season, medium size, very firm in flesh, and rather sour.

Lester Lovett; perfect flower, it is more shy and comes in later than the Gandy. There has been some discussion about this variety, some holding that it was a very fine berry, but that is not the way it has appeared to me. It does not seem

to improve much. There are only three or four berries, and they never seem to mature as they ought to.

Lady Garrison; perfect flower, ripens June 12th, fair quality, productive, bright red. This is a berry that promises to be A1 in most every respect.

Midnight; perfect flower, ripens a little later than the others, about June 25th. The first of that variety come along about June 25th. It is large, firm, broadly conical in shape, and a bright scarlet in color. It was a late bearer, and rather inclined to be a rank grower. It is good flavor.

Mead; perfect flower, matures about June 20th, productive, firm, and of very good flavor.

President; perfect, ripens about June 18th, a shy bearer, large, good flavor.

Parsons' Beauty; perfect, ripe June 16th, or usually about the second week in June, medium large, irregularly conical in shape, acid in taste, fairly firm, but not so firm as is desirable. Rather large, and a fair bearer.

Uncle Jim; matures about June 15th, large in size, prolific, perfect, good grower.

That is all the newer strawberries that we had of any particular value.

There was one thing in currants, of which great things are claimed. The climbing currant—I have not seen very much of it, and I think it would be better to wait before we go into it very deeply. The originator claims it can be trained on a trellis, but it has not been tried much in Connecticut. Therefore, I think it would be better to wait before we say very much about it.

Last winter was an exceedingly severe one on peaches. There have not been any new varieties that I know of, the varieties being the same as we have had in our reports for a number of years. We have mentioned most of these varieties, including the Carman, Triumph, Champion, Belle of Georgia and Waddell of the newer varieties. I have had reports from a number of people relative to the hardiness of these varieties. The Champion, Belle of Georgia and Waddell are particularly so. They have stood our northern season in good shape, except in a very few cases, where they

have been planted in low places. We had one orchard, the lowest orchard which we had, and the trees in that looked kind of tough for a while, but it gradually recovered, and is in fairly good shape now.

I have not been able to get much information about the newer plums. We had a few of a new variety, for which some good points were claimed, but it proved to be a rather shy bearer.

In apples, I have had some opportunity to study, but have not found very much new information to give you. I went to the meeting of the Western New York society, but was not up on what was new. There are two or three that have been brought out from the Agricultural Experiment Station, like "Dudley's Winter." It is a good winter apple, a good filler, bright in color, good appearance, large, spreading tree in growth, and it is a good winter fruit. Has good quality, and the only objection to it is that it is a broad grower.

There has been some discussion among horticultural people as to the value of the Bismarck. We had quite a discussion about that on the floor in the New York society. Many thought it was a first-rate variety, but there were some that were a little against it.

There is another apple that came to my attention that seems to be a good apple for business purposes. I don't know just what value there is in it. I refer to the new seedless and coreless apple that is mentioned by John F. Spencer, of Grand Junction, Colorado. I presume some of you have seen the little circular that he sends out. The gist of that thing is that he wants to form a company to grow it, and he wants to sell trees at a pretty high price apiece. He makes big claims for it. I would not advise anybody getting into it very deeply. It might do for somebody to try it and see what it would do in this climate.

I do not know as there is anything else that I can mention, Mr. President.

THE PRESIDENT: The report of the committee on New Fruits will be accepted and published in the proceedings, if

there is no objection. If there are any growers here that have anything to add to this we should be glad to receive it.

We will now hear the report of the committee on Fungous Diseases.

Report on Fungous Diseases for 1904.

BY DR. G. P. CLINTON, New Haven.

The past year was not especially distinguished for serious outbreaks of fungous diseases when compared with the two previous years. By far the most serious trouble was the injury resulting from the unusual cold of the winter 1903-4. Since winter injury to fruit trees has been confused by some as possibly the work of fungi, a brief statement of its damage will be included here. We will very briefly consider these troubles of the past year, according to the host, as follows:

Apple. No very serious outbreak of any of the fungi that always occur on the apple has been obtained or reported.

Winter injury, on the other hand, was observed in a number of young orchards in which cases the wood had been blackened and often killed, usually down to the snow line, while the bark, cambium and roots remained uninjured. The injury was worst in the low protected places rather than on the higher exposed grounds, thus indicating that it was largely due to the wood not being thoroughly ripened for an unusually cold winter. Greater care should be used in selecting sites for our orchards. Trees only set out for a year or two that were severely injured could in most cases be saved by cutting back to the uninjured wood below the snow line, provided this did not extend down to the stock, and starting a new stem from a single bud of the scion. Trees not so severely injured can be helped by severe pruning. Of course, some trees were killed or so severely injured that the most effective treatment was their replacement by a new one. With older trees the injury often showed itself through girdled areas at the base of the trunk or by its splitting. These dead areas should be scraped and the wood painted to prevent subsequent rot from fungi.

Grape. The powdery mildew, *Uncinula necator*, was unusually prevalent last fall. It appeared most conspicuously on the fruiting pedicles and fruit. Except on the thin skinned varieties, the damage was not very great. On those varieties, however, not only was the presence of the fungus on the fruit objectionable for appearance, but it also induced earlier wilting.

Mulberry. This plant in Connecticut is apparently grown only as a shade and not as a fruit tree. In one of the local nurseries the past summer there was observed, for the first time in this state, the European bacterial disease, *Bacillus lubonians*, that attacks both stem and leaves. This trouble produces small cankered places on the stems that finally work their way between the cambium and wood internally, killing these, or else are crowded out by a vigorous growth of new bark. Badly diseased branches or young trees show a yellowish foliage and make an unsatisfactory growth. On the leaves the germs form small, reddish brown, semi-pellucid areas that more or less thickly cover them. Severe winter pruning is the only remedy to be suggested.

Musk Melon. Last year, for the first time in several years, growers succeeded in raising a fair crop of musk melons. This was in part due to the more favorable season for growth, and partly due to the absence of the downy mildew, or blight (*Plasmopara lubensis*) that recently has played such havoc with this crop. Discouraged by previous failures, however, many growers last year planted no melons or greatly reduced their acreage. The last two seasons have shown that the downy mildew is disappearing, as is its habit, and provided July and August of this year are fairly warm and not too moist, little need be feared from this trouble.

Peach. For the past two seasons, due to winter-kill of the fruit buds, the peach crop of the state has been small. For this reason, the brown rot has not been especially conspicuous, since it does most damage with a full crop in a wet season. It is mentioned here because last spring, for the first time in this state, the mature or winter spore stage of the fungus was found both at New Haven and Storrs. This stage develops funnel shaped bodies, about an inch in length,

the long sterile pedicles of which shove the cup-shaped fruiting surface above ground from the half buried peach mummies. Besides the infested twigs and the mummies adhering to the trees, both of which produce only summer spores like those formed in the rotting fruit, we have this third method by which the fungus is carried over the winter and infects the blossoms and young fruit in early spring.

Last year attention was called to a physiological trouble of strawberry leaves, termed frosty spots. A similar trouble has been reported on peach leaves. The under surface of the leaves shows purplish discoloration, and finally a silver grey appearance, as if attacked by a mildew. Microscopical examination shows no fungus present, but does reveal the epidermis, and later the leaf parenchyma discolored and their cells finally collapsed. The trouble seems to arise from an insufficient water supply or the inability to control its transpiration, as it is confined to the lower surface, where are situated the stomata that regulate the loss of water, and as it shows most severely near the bundles, which bring the water to the leaf. It has seemed to the writer that possibly it may result from winter injury to the roots.

The peach suffered most of all the fruit trees from winter injury. A number of orchards were so severely injured that they were partially cut out. The injury was chiefly the damaging of the immatured wood down to the snow line. No doubt the snow saved the orchards from more severe injury. In some orchards, where the snow had blown off the ground, trees were found where the injury was chiefly in the roots. The outer roots that spread out near the surface were often killed, while the inner ones that tend to penetrate deeper into the soil were less severely injured. Most growers cut out the dead trees and those badly injured and severely pruned those less injured.

Pear. Pear scab was not unusually conspicuous last year. It is mentioned here to call attention to the beneficial results in preventing it that possibly follow spraying with lime and sulphur for the San José scale. It is well known that certain varieties of pears scab worse than others, and it also has long been known that the fungus carries over winter on some trees

through its parasitic stage on the young twigs. These infected twigs have been found in this state and probably are not uncommon on certain varieties. For two or three seasons the writer has observed a few trees in a yard in New Haven which furnished plenty of scabby fruit. Last winter these trees were sprayed with lime and sulphur for the San José scale, and last summer, for the first time since under observation, very little scab was found on the fruit. If this result was due to the spraying, it came through the prevention of the infected twigs forming spores to reinfect the young leaves and fruit.

Raspberry. The writer's attention has been called to an apparent winter injury of blackcap raspberries very similar in its appearance to the wilt fungous disease of these plants. In the exposed part of a certain field some of the varieties about ripening period showed a serious wilt of the fruiting canes, many of which eventually died, leaving the half matured fruit dried up and attached. New canes started from the roots, showing these were not injured, at least not severely. An examination of canes showed no sign of the wilt fungus, and as the trouble was severe and noticed this year for the first time, it appears to have been due to winter injury. The writer would be glad to hear from any who have suffered from a similar trouble.

THE PRESIDENT: Have you any questions to ask of Dr. Clinton? If not, this report will be received and published with the other committee reports.

We will now take up the regular program of the session and listen to the addresses and papers from those who have been especially invited to be with us, and we shall begin by calling upon one who has come to us from a distant state, and from whom I am glad to say we shall have at least two talks before the meeting closes. We will now have an address on the "Experiences of a Virginia Fruit Grower," by Mr. S. L. Lupton, Secretary of the Virginia State Horticultural Society.

Experiences of a Virginia Fruit Grower.

By S. L. LUPTON, of Winchester, Va.

Mr. President, members of the Connecticut Pomological Society, ladies and gentlemen: I am exceedingly glad to be with you to-day, and especially glad to see so many ladies in the audience. There is always room in a horticultural society, in this and every other state, for the ladies. There is always room in agriculture for the ladies. Those of you who have not yet succeeded in attaching yourselves to some coming Connecticut horticulturist must bear in mind that there is even room in agriculture for single ladies. Perhaps you are not aware of the fact, but it is stated to be a scientific fact, that you can not grow clover without old maids. (Laughter.) Old maids keep cats, cats destroy field mice, and field mice, if allowed to propagate, destroy the bumble bees, and the bumble bees carry the pollen, without which we cannot have thrifty clover. So if we have no old maids we would have no cats to destroy the field mice, and the field mice would destroy the bumble bees, and we would have no clover. (Laughter.) I merely throw that out as a suggestion to add to the comfort of some of you to-day, if any of you need such comfort.

I feel somewhat embarrassed in talking to an organization like this, many of the members of which have grown old in this business, and all of whom have had the pleasure of having such a horticultural teacher as our friend Hale. Perhaps I can best explain to you just how I feel by telling you a story, and as the theme of my story is laid in that better land, where moths do not corrupt, and where thieves do not break through, nor steal, you may like to know about it. Not very long ago a citizen of your neighboring State of Pennsylvania died and went to his reward. He went up and claimed admission at the pearly gates. St. Peter asked him upon what ground he asked admittance, to which he replied: "I am one of the survivors of the horrors of the Johnstown flood, and I claim admission to this celestial country by reason of the good service that I rendered on that occasion." St. Peter recognized the justice of the claim, and he was admitted to fellowship within the gates. This so pleased our friend from

Pennsylvania that thereafter, upon all occasions, he talked about the Johnstown flood. In season and out of season he talked about his experiences at the Johnstown flood, but always, under all circumstances, he noticed one man who did not seem to be interested, and who turned away with a shrug of his shoulders and seemed to be bored. Perhaps he was rather a heavy set, square built fellow, about such a man as our friend Hale. (Laughter.) Somewhat disturbed at the discourtesy, our friend from Pennsylvania went to St. Peter and asked him why this old man turned away when he was talking about the Johnstown flood, and he asked St. Peter who he was. "Why," he said, "that is Noah. He has been in a flood himself, and he thinks he knows something about floods as well as you do." (Laughter.) So that I imagine that perhaps Hale, and may be some of the rest of you, feel the same as our Pennsylvania friend did after that, when he undertook to talk about floods in the presence of Noah. You can understand my embarrassment, therefore, when I undertake to talk about fruits in the presence of J. H. Hale.

Now, it may also be true that before I tell you about the fruits that grow in Virginia you would like to know something about the country in which that fruit is grown. I think it is more than likely that some of you visited the Shenandoah valley along in the sixties, and, although we gave you a very warm reception at that time, my impression is that you overstayed your invitation and came very near wearing out your welcome. Before your visit to us in Virginia "F. F. V." meant "First Families of Virginia." At that time, like Hale's peaches, they were all firsts, and no seconds. As the direct result of your visit, and for some time after, you left us, F. F. V. meant "Fight for Victuals." Now, F. F. V. means, of course, the "Finest Fruits of Virginia," which in turn means finest of the country, barring none.

We have, however, not forgotten that visit of yours in the sixties, and if you left us at that time with the balance a little in your favor, we propose to get even with you some day, and we believe that day is not far off. And this is the way we propose to do it: We propose to ask you to close up your cotton factories, to surrender your mill sites and move down

south, where labor is plenty and cheap, and where the raw material will be at your very door. We propose to ask you to draw the fires from under your furnaces, and to bring them down South, where iron and steel and its products can be made cheaper than anywhere else in the world.

When President Roosevelt gets through revising the freight rates, we propose to send our goods cheaper to you than you can make them for yourselves. When President Roosevelt gets the tariff revised we expect to buy our clocks cheaper in Germany than you can make them in Ansonia. And I want to communicate to you the fact, which may not be generally understood here, that our Virginia hard woods make the very finest flavored nutmegs in the world, and I am afraid when that fact becomes generally known, Connecticut will have no market for her well-known product. When all these things have been accomplished, and you are ready to give up yourselves and come down and make your home in our favored country, we want you to bring your sons and your daughters, and you will be as welcome as the flowers that bloom in the spring, but we do not want you to think that you are coming to a new country. We do not want you to understand that you are going to be pioneers in any sense. All that has been done for you and is part of our history. Furthermore, we want you to understand that in Virginia there is no question before the American people that we have not already fought out and settled. So that peace reigns there, and inasmuch as it is for your interest and your future prosperity to come and dwell among us, I felt that I ought to tell you these few things, just by way of introduction, about old Virginia.

Now, you know there has been a good deal of talk about subsidizing our steamship lines and building up a great merchant marine. That was the favored scheme and purpose of the late senator from Ohio, Mark Hanna. Lots of people thought that was a new thing in the United States. When you go down to Washington, as some of you may do, to attend the inauguration, you want to go over to Arlington, on the Potomac side of the river, and you will see over there a bronze tablet giving the history of the first ship subsidy bill which

was ever passed in this country. That tablet will tell you that it was to an English ship for freighting emigrants to this country that the amount was granted. That was the first ship subsidy bill ever known in this country. It happened a hundred years before Mark Hanna was born.

Recently, here in Connecticut, you have had some agitation, I understand, in favor of good roads. I am told that you have had experts here from Washington to talk to you about them, and, as the expert is usually the last man to find out the facts, they have probably told you a great many things that were not so, about good roads. Virginia is away ahead of you in that particular. You see we have got a few things to boast of. In 1815, a French engineer, by the name of Crozet, who was in the French army, escaped after the battle of Waterloo and came to Virginia. He was immediately employed by the State of Virginia and sent over into that great valley of the state where I live, to build some good roads. The state paid three-fifths of the amount and the land owners paid the other two-fifths. He built some roads, and those roads are as good to-day as they were when they were built. In my own little County of Frederick there are 75 miles of the best roadways that we have anywhere. In 1861, just before your visit to us, a gentleman by the name of Jackson acquired from the Baltimore & Ohio Railroad forty locomotives, of large type, and his master of transportation hauled those locomotives a distance of 125 miles over one of those roads with horses. After the war, Robert Garrett, who was at that time President of the Baltimore & Ohio, heard of that feat of hauling these locomotives 125 miles, and he thought that the man who did that would make a good master mechanic, and Thomas R. Sharpe was made master mechanic of the Baltimore & Ohio by reason of that feat in hauling those locomotives that distance over a road that had been built since 1815. So, gentlemen, you will observe that we have been preparing for your contemplated visit and your contemplated residence for a long time.

Now, it only remains for me to tell you about the orchards that we have planted upon our sunny hillsides, and of the great prospect which has opened up before us from a com-

mercial point of view, to fill the measure of your discontent and bring you to us in a body.

I want to say here, before I proceed any further, if any gentleman in the audience desires to ask any questions during the progress of this talk, I should be very glad to have him do so. I think it is sometimes better, when a question comes into one's mind, to ask it then and obtain the information, which perhaps may be of value, rather than to hold it back until the conclusion of the address. Then it may be forgotten and not asked at all. So in the progress of the paper I should be glad to answer any question at any time.

The oldest orchard of which I have knowledge in Virginia was planted in 1814, in Nelson County, the varieties consisting of the old Newtown Pippin, Spitzenberg and varieties of that kind. The trees were bought on Long Island, and for a great many years the Spitzenburgs raised in that orchard were famous throughout the whole country for their fine flavor and quality. Not very long ago I visited one of the largest trees in that orchard, which is in an immense forest, and it is still in a thrifty condition.

In 1835 my grandfather planted the first commercial apple orchard in the valley of Virginia, not thinking, at the time, of shipping fruit for general consumption in the markets of the country, but only planning to cater to local consumption. The varieties that he planted were very much the same, some of which are gone, but I remember very well that there were quite a few Newtown Pippins among them. Since I have been with you to-day, some inquiry has been made of me concerning the famous Albemarle Pippin, and I am pleased to say this to you now, that we have the Albemarle Pippin, but it is in reality the old Newtown Pippin, just the same as you have here in Connecticut, and in New York and Maine, but growing under different conditions of soil and climate.

THE PRESIDENT: Is that what they call the Yellow Newtown?

MR. LUTON: I do not think there is any difference. I think the one which you have here would become yellow if grown with us. Personally, I like the flavor of the Green

Newtown apple the best. I think it has a finer texture and a finer flavor.

In 1875, my father planted forty acres of Newtown Pippins, and the neighbors in that community thought he was insane and would wind up by reaching an asylum. Eleven years later, in 1886, the apples from that orchard sold for fifty-two hundred dollars on the trees, and from that time on commercial apple raising was an assured success in that community.

Nearly all of the commercial apple orchards in Virginia have been planted within the last fifteen or twenty years, and to give you some idea of the growth of the business in that time let me say this: We had a fairly good apple crop last year, and we turned out at the station at Winchester, where I live, about a hundred thousand barrels, and we ought to add a hundred thousand barrels to that each year for the next ten years, even if we do not plant any more than what we now have in the ground. So that, at a very conservative estimate, within the next ten years, even if we do not extend the operations which we have in hand now, when all of the trees come into bearing, these orchards will turn out somewhere in the neighborhood of a million barrels of apples. What I have to say is more specially in reference to apples, because that is our principal orchard fruit, although the past season we shipped from Winchester about 136 carloads of peaches. Just over the line in West Virginia there is one orchard which turned out about 150 carloads of peaches alone.

MR. HALE: I want this audience to appreciate what that means. You say that you are going to turn out a million barrels of apples within the next ten years? There are a thousand other stations in the United States that propose to do the same. What are you going to do with a thousand million barrels of apples?

MR. LUPTON: Well, sir, I do not think your statement is accurate, if you will allow me to say so. (Laughter.) There is one thing, I expected to find just the same condition here that we have in Virginia. It has always been a little surprising to me that wherever Hale goes he always scolds people, and people somehow or other seem to submit to it.

Just let me talk to you a little about that. My impression is that in a good many localities you have got to go out of the peach business and plant apples. My impression is that the localities for growing first-class fruit, both in peaches and apples, is very much more limited than a good many of us think. I know there has been a great deal of talk about Connecticut being a splendid apple and peach state, and about the same condition prevailing in some sections of Pennsylvania, Virginia, West Virginia and other states of the further South, but I am of the opinion that the people have gotten the wrong idea from that kind of talk. Not very long ago, in conversation with a gentleman—that gentleman there—(indicating Mr. Hale) he said to me, "You hill fellows are going to be an example of the survival of the fittest, and we will have to go out of business in Georgia." It is the hill people that are going to make the success in fruit growing in the future. I do not think that my statement about the quantity of fruit that we are likely to turn out need scare anybody. When I say that we shall ship that quantity of fruit from my own station of Winchester, that, of course, means the whole section in that immediate neighborhood, because that is the shipping point for that whole section of country. At any rate, those matters, like others, are regulated by the law of supply and demand, and people are not going to raise apples for market if they can not sell them.

Of the varieties that we grow in Virginia, I see practically none here on your exhibition tables. We grow the Ben Davis, which is not an apple of high quality, as we know, but it fills the barrel, and it brings the price. Not long ago, in an address delivered by Mr. Collingwood, of the *Rural New-Yorker*, he made the statement that there were two millions of people in New York who did not know the difference between the Ben Davis and the Baldwin, or any other better variety. Now our people down in Virginia, in growing the Ben Davis, are catering to those people. The Ben Davis seems to fill their demand. We think our market for the Ben Davis is going to be pretty steady. That explains why we grow the Ben Davis. We grow the Ben Davis, and also the York Imperial, the Greening, the Albemarle and Newtown

Pippin, the Jonathan, the Mammoth Black Twig, and some other varieties as well. Almost our entire output are of the late keeping winter varieties. We grow very few summer varieties, or earlier varieties. Some early varieties are planted merely for the sake of having some for use at home, but apples like the Baldwin and the Northern Spy, and the King, and the Roxbury, and the Greening, do not do well with us. The fact is we can not do much with them in Virginia, because they ripen too early, and do not keep long enough in our climate. The Baldwin, which is one of your favorite apples up here, with us grows to be very fine and large, but we have to get rid of it by Thanksgiving time. That is a little too early to make it thoroughly successful with us from a commercial point of view. The York Imperial with us is one of our greatest commercial apples. That has a defect, however, but we think our scientific men will be able to discover some remedy for that before the sale for the York Imperial is hurt very much in the markets.

Myself and two other gentlemen, who are interested with me, have planted nearly seven hundred acres of apples, most of which are coming into bearing, and our operations do not excite nearly so much comment now as did my father's operations at the time he planted forty acres in 1875. Most of our growers insist upon hardy, strong, well grown, two year trees. Very few of us are willing to plant switches. The trees are planted in fields, that are intended for corn, the same spring. We try to get the trees out in March, and have the ground ready for corn the same year. The corn rows are spaced so that one hill is missing where each apple tree is planted. The apple trees need no cultivation the first year, other than what is given to them incidentally by cultivating the corn. The second year wheat follows the corn, leaving a space of three feet on each side for cultivation during the second summer. We think the best implement is the spring tooth harrow, running that up and down by the tree rows on each side. After two crops of wheat are taken from the young orchard, it is usually seeded down with timothy or clover, and the whole thing allowed to remain for two years. Usually, routine farming on the land is very little interfered

with until the trees get to be six or seven years old, when they have grown so large as to stop the growing of the crop upon the same land. As soon as the orchard comes into bearing it is seeded down into grass and allowed to remain so permanently. You have heard a great deal lately about the sod and mulch method of caring for orchards. I have been somewhat amused at the outcry that has been raised at this new discovery in horticulture. With us the sod and mulch method is an old story. We southerners have been practicing that method because we thought it was the easier way to grow fruit, and there are some that have thought that the roots of a bearing orchard should not be disturbed, and that you could not put a plow and cultivator in without disturbing the roots of a bearing orchard, and thus doing more harm than good.

A MEMBER: What do you think about that yourself?

MR. LUPTON: Do I think the sod and mulch method the best method? I do not. As an evidence of that I have, within the last ten days, signed a contract with the government at Washington whereby they have agreed to come to my place and establish an experimental orchard, in which the work is to be carried on according to original methods. Nor do I advise the sod and mulch method, because I think disaster will follow if you practice that method to its logical conclusion. If it were not for the fact that most of our orchards were young, we would already be suffering from this method of cultivation. One of the serious drawbacks to the sod and mulch method, to my mind, is the fact that the mulch brings all of the roots of the tree near the surface, and the tree suffers from dry weather in August and September, just at the time when the tree needs moisture the most, in order to carry its fruit to maturity. Another very serious drawback is the injury which is liable to result to the tree from mice, rabbits and things of that sort. I observe in your list of questions to be answered here to-day, "What is the best protection against mice and rabbits for apples in sod mulch?" My answer to that question would be, take the sod mulch away, and the rabbits and mice will probably leave. One of my neighbors undertook the sod mulch method about four years ago, and last year he had four hundred twelve year old

trees destroyed in that orchard by mice. Perhaps some of you will ask why we pursue that method at all in Virginia if we do not think it is the best method. My reply would be that I was not asked to come here to tell you *why* we did things in Virginia, but to tell you *how* we did them. (Laughter.)

Pruning with us is practiced very little. In fact, very little pruning is needed if you get first-class trees from the nursery, well grown, and well developed, strong, vigorous stock. We practice pruning just as little as we can, thinking as a rule that more harm is done in that direction than good. Our people, the growers in our country, think that the best lands are none too good for the orchard, and the best lands in my section command prices ranging all the way from sixty to seventy-five dollars an acre. I do not mean by that that our fruit lands can be held at such prices, taking them right through, but what I mean is that if you want to buy a farm, well located, well improved, and with good buildings, you will have to pay, on an average, of at least fifty dollars an acre. There are many miles of so-called fruit lands in Virginia which, of course, would not be worth that, but for good land you have got to pay a good, fair price. Of course, the nearness of the land to the railroad station makes a good deal of difference with its value. When you come to talk about land that is five miles or more back from the railroad, of course that is a different proposition. The difficulty in getting fruit to market promptly is one that is quite serious, and of course, where a farm is situated some distance from a railroad station, making it necessary to haul the fruit a long distance, that militates against the value of such a farm.

No fertilizers have ever been used in any orchard with us. Just what the result would be after a liberal fertilization, I am not able to tell you. So little has been done in that line in our country that I have practically no information. I do not know of a single bearing orchard in my country that has ever been heavily fertilized, with the possible exception of one. There is one orchard in West Virginia, near where I live, which is said to have been taken care of in that way, but I have no definite information as to the results that have been

obtained from it, and I am not prepared to discuss it. Mr. Hale has been in that region and he may be able to give you some information.

Considerable damage has been done with us by the apple borer. For the first ten years we thought the borer was not causing much damage, but of late it has developed into quite a pest. Of course, the treatment is as well known to you as it is to us. We go over the orchard twice a year and find the holes and dig them out. We also have found that an application of white lead and oil is very effectual in treating them. It affords protection to the trees, helps to do away with the borers, and on the whole we have had very good results from this application.

The San José scale is with us, like the Heavenly Twins, I think, it has come to stay. No great harm has yet been done, but our people are beginning to treat it with the lime, sulphur and salt, and other washes, and I am inclined to think we will hold the scale in check. We have a fairly good scale law in Virginia that is getting into good working shape. In the discussion this morning about some business before the legislature, which your people are interested in, it occurred to me that when your legislative committee gets to work they might do well to look into the law we have in Virginia, because we have a fairly effective law for all insect pests. Your legislative committee might get some useful points from it.

If we are in a sleepy condition in the matter of growing our trees, I think possibly, in the matter of picking and packing our fruits, and delivering our fruit to market, our methods are as good as those anywhere in the East. I think possibly our western growers, west of the Missouri River, and on the Pacific Coast, may outstrip us somewhat in that particular, but I know of no other fruit section of any magnitude where the fruit is put down in the market in any better shape than we do it. You will excuse me for bragging a little about that. Picking with us begins about the first of October. An effort is made not to allow the fruit to touch the ground at all. Portable packing tables are provided, which are carried along with the

pickers in the orchard, and it is not infrequently the case to find the fruit on the shipping station platform at the depot the same day it is picked. We do not think it ought to be allowed to be piled up on the ground, or to be picked when it is wet, even when the dew is on it. Some days it is picked and put into the barrels, sorted and classified, and before evening of that same day that it is picked is on its way to New York or to some other market where it has been sold.

Nearly all our fruit is sold in the orchard to buyers, who come to our section from as far west as Chicago, and from many of the intervening cities, and also from up here in New England, from Boston, as well as from New York, Philadelphia and other large centers. We have had several men from New York who have established agencies with us, and who visit us every year that we have a crop. The usual way for selling our fruit is for the buyer to contract to take all fruit which is free from defects, which will measure two inches and a quarter. Most of the men are furnished with an iron ring, gauged for two inches and a quarter, and they use that in packing. The same price is secured for all grades of fruit. At first, when the buyers used to come to our section, they used to pay so much for first grade, and so much for seconds, but that did not prove to be satisfactory, because the tendency was to make too large a number of seconds. So, without exception now, we sell to the buyer at so much for all apples that will measure two and a quarter inches, and we do not care how many number twos he makes. The barrels will cost somewhere about thirty-two or thirty-three cents, and in our country they are frequently made in the orchard. We have a local man who goes around and makes the barrels in the orchard at a cost of about thirty-two to thirty-three cents apiece.

Of course, the method of packing is about the same in the smaller orchards as it is in the larger. In the larger orchards however, some growers have apple sheds, or what they call packing houses, in which they store away the farming implements during the winter, and some of them have sleeping places for their men. They hire a colored man for a cook, who attends to all that sort of thing, and boards the men

who are engaged in the picking. And that suggests a thing which may be interesting to you—no colored labor is employed in the orchards in our section. It may perhaps be interesting for you to know that we have no negroes in the section of the state from which I come. That is, none to speak of. They have never been there. That section of the state, therefore, has not been troubled with the perplexing labor problems which have arisen in sections where the colored help has been abundant. The labor in our section is almost entirely, in fact I may say, entirely white.

A good man will pick about 45 to 50 bushels a day, and with five men at the packing tables and ten to pick we are able to grade, sort and barrel from 80 to 100 barrels a day. So that we estimate it will cost us from sixty cents to seventy-five a barrel to pick and sort and lay fruit down at the railroad station ready for shipping. Of course, it depends, to some extent, upon the distance from the railroad that the orchard is situated and what it will cost to haul the fruit to market.

The last year apples sold with us for less money than I have ever known them to sell before, and yet a careful study of the statistics, kept by our local horticultural society, of some 60 to 100 places, shows a net profit of about one hundred dollars per acre, even though the fruit sold for less money than ever before. I do not know whether we will have a repetition of that or not, but we have been fortunate in this respect, that our crop years have been good when your people in the North have had a short crop. I do not know of any particular reason for that, but that is something that we very frequently hear spoken of. Our scientific friends say that that condition will continue. I have no information on that point, so I am not able to dispute any of their statements, but I don't know why they think so.

Plums are being planted quite largely with us, and have done fairly well, but the market for that fruit, which has existed heretofore, seems to be rather overdone. There does not seem to be the same encouragement for the grower in the plum line that there does in some others.

Cherries seem to be at home in our country. Although I know of no one who has tried cherry growing on a commercial scale, yet there are tons and tons of cherries shipped from Winchester every season. There is this queer fact about our local situation: I do not know of a single cherry tree in that whole section planted by hand. The road-sides and fences are filled with cherry trees, planted by the birds dropping the seeds, and many of those trees have attained immense size, measuring as much as two and a half feet across the stump, with wide spreading branches, and big as a sycamore perhaps, and bearing sometimes anywhere from 20 to 30 or 40 bushels of cherries of very fine quality. The method of gathering cherries is sometimes very much like that of the boys who go nutting. In the spring of the year a company of young people will go out and the men will climb the cherry trees, obtain all they can, and then they will saw off the limbs and let them down with a rope to the girls. After a season of such treatment as that those old cherry trees look as though they had been dehorned, but they seem to come along the next year and produce a new crop. The final and inevitable result of that sort of treatment for the trees, of course, is that they die, but they do not do so for a long time. I am inclined to think that in the future the cherry orchards of the country will be found in Virginia, on the foothills of the Blue Ridge Mountains. I do not know of any place where cherries seem to develop as they have been doing with us.

The small fruits are grown with us almost not at all. In fact, I am in doubt whether our heavy soil is suited to the growing of berries. We hardly grow strawberries or any of the smaller berries in sufficient quantities to furnish a supply for our own home consumption.

The subject of marketing our fruits is too complex and too important to be discussed within the limits of this paper. It is possible that you may have an opportunity later on in your meeting to discuss that very important question, and with a view of some possible discussion later on I want to give you some figures to think over. We may have some discussion on it to-morrow. I have heard several of our growers say that they would be satisfied if they could get a dollar, net,

for their apples. That does not seem to me to be enough. I am not satisfied with that price for first-class fruit. The result of a calculation which I made, for which seemed to me successful fruit growing, perhaps will answer the question which Mr. Hale asked me some time ago, about what we were going to do with the quantity of fruit we were raising. To my mind, the solution of the problem of successful horticultural work in the future lies in putting your fruit in the hands of the consumer in a package so that that fruit will not be handled in transit any more than oatmeal and corn-starch are handled in transit. I do not see why it is necessary for you people to pack your fruit in a way which makes it necessary for the groceryman to unpack before he can put it in the hands of his customers. I can not understand it, although you do it.

Now I would like to have you pay close attention to these figures, and, if I am wrong, correct me. If the grower is to net a dollar for his apples, let us see what they should cost the retailer when he gets that fruit in his store, ready for distribution. We will take New York as a basis, because all our fruit goes to New York. Suppose the fruit did net the grower a dollar a barrel. Now the barrel costs 35 cents, the packing, loading and hauling 12 cents, freight from Winchester to New York 24 cents, cartage 10 cents, storage 25 cents. Perhaps some gentleman here will object to that and say it ought to be 50 cents. I put that in as an estimate, because all apples do not go into cold storage. It seems to me that on the average it would cost at least 25 cents. Commission 20 cents. Making in all \$2.25 per barrel as the cost to the retailer of the fruit laid down in his store. That is, it costs the merchant on the street that amount for the fruit in his store. Now, he adds 25 cents, so that that makes the price to the retailer, in round numbers, \$2.50 per barrel. Now I have tried to make a summary and to compare the price obtained one year with another, and have carried that on for some 13 or 14 years, and the result of my observations has been to show that the retailer realizes about \$4.80 per barrel, leaving a profit to him of \$2.30, or more than twice as much as the grower got for the fruit. Now it seems to me

that right there is the nub of this whole situation, for you must divide that profit with the grower in some way or other. We have learned to grow two apples where one grew before, but neither the grower or the consumer have received the benefit of that knowledge. Now, I am not here to make any attack upon the middleman. He is necessary to our trade, he is necessary in distributing our product, but I do say that there is something wrong when the retailer apparently makes twice as much profit as the fruit grower gets for the fruit, leaving out, of course, the question of waste, which can not be estimated. I hope, Mr. President, that later on in the meeting some discussion will be had upon this subject of marketing fruit, because, to my mind, it is one of the most important subjects that we have to contend with to-day, and it seems to me that a correct solution of the problem will be of the greatest importance to us for a great many years to come.

Now, ladies and gentlemen, I have perhaps kept you longer than I intended, but I want to thank you for your patient attention. I am extremely glad to have been here with you, and I should be glad to answer any questions which are within my ability. I would be glad to have any of you come to our country that can find your way down there. I know you will not be disappointed if you make us a visit. A great many of you gentlemen know all about that country, but for all that, come down and see it again.

I have some photographs here, Mr. President, showing some six year old York Imperial trees. I have some other photographs showing some fifteen year Grimes' Golden, which yielded an average crop of fifteen barrels per tree. They were taken in the orchard during the picking season, and give a fair idea of the size of the tree and of the appearance of the trees.

Mr. Lupton's very interesting address was attentively listened to, and thoroughly enjoyed by all present. At its conclusion the following discussion took place.

MR. HALE: Mr. Lupton, may I ask one question? In your discussion of the cost of putting a barrel of apples on the market and the supposed cost of those apples to the retailer,

you stated that on the average, when the retailer sold those apples, he got twice as much as the grower did. Now you state that you allowed the packer in your orchard 25 cents. Why in the name of good business don't you do that yourself?

MR. LUPTON: That is a problem I have been trying to work out. Perhaps you will think I am blowing a little, but —

MR. HALE: I know you are.

MR. LUPTON: Well, I can afford to when I am with you. (laughter). Every year I have determined to pack and ship my own fruit. I have made up my mind to that, and four years ago I bought 17,000 boxes. I sent up to New York and I was determined to put my own fruit into this market, but the fact was the New York men offered me two dollars a barrel for that fruit, and I could not resist the temptation. There was about seven or eight thousand barrels of it, and all I had to do was to walk around, or sit under a tree, and let him do the work. I simply could not afford to take the risk of loss in the face of that offer, and the buyer refused to let me pack any boxes. I said to him, "Won't you let me pack five hundred boxes and see what I can do," but he said to me, "If you are going to sell me your fruit I must have it all." Up to the present time I have not had the moral courage to go into the market and sell my own fruit. As long as the price offered was so satisfactory I just simply could not do it.

Now I should be glad to answer any further questions.

THE PRESIDENT: If there are any of you that have any questions to ask Mr. Lupton he certainly can give us a good deal of valuable information, and we ought to try to get all we can out of him.

MR. WALLER: Did I understand you to say that 32 cents apiece was the average price that you have paid for your barrels?

MR. LUPTON: It has not been as high as that. Until last year the average price was about 31 cents. Last year barrels were higher with us, but I think they will go down next

year. We make coopers' stuff. We cut the slabs ourselves. I have got a man on my place now, and when the season comes on we make provision for that. So we are fortunate in that particular. I have run a cooper shop myself, and sold barrels for 32 cents, and made a little profit on them. That is, for what we call a first-class ten-hoop barrel.

MR. WALLER: How much does that barrel hold?

MR. LUPTON: It will hold three full bushels, and perhaps a quart of apples or so over.

MR. INNIS: Is it as large as a flour barrel?

MR. LUPTON: The Virginia law specifies the New York barrel. It is the same barrel that we use for flour, exactly. We sell barrels to the flour mills sometimes, when we can not sell to the orchardists.

A MEMBER: I would like to ask Mr. Lupton how he accounts for the retailer not getting the price that he ought to, so as to give the grower a fair price for his fruit. Is it because there is not enough choice fruit?

MR. LUPTON: I think the trouble with the retailer is that he gets too much inferior fruit. If he got good fruit, and got it straight from the grower, he would not be able to get that price, that is, if the market was full of carefully selected good fruit. I have never been in a meeting of a horticultural society that there was not some criticism of the way the fruit grower packs his fruit, but that criticism, so far as our section is concerned, is entirely out of place, for at least eighty per cent. of our fruit is all packed by the man who buys it. The grower never packs his fruit, with us. I don't suppose there is one-half of one per cent. of the fruit that comes from our section that shows up in the New York market but what is packed under the direct supervision of the buyer himself. The fact that they come down there and take all our fruit that way shows that it pays to put in good fruit.

In New York they are up to all sorts of tricks. They turn the barrels upside down before opening, and all that sort of thing, but if there is any difficulty it can not be laid to the growers, for we do not pack our own fruit at all. Never

have done it. I never knew of any section of the country where that was so universally done as it is with us.

We have had no trouble in selling all our windfalls and culls. They are sold to buyers who make a specialty of picking up that class of fruit, and they are sent up into the mining towns and sold there for immediate consumption.

A MEMBER: Do you thin your fruit, Mr. Lupton?

MR. LUPTON: No, sir, I have only practiced thinning fruit just a little, but only enough to keep the trees from breaking. Where I thought a limb was liable to break off I would take off enough fruit to save the limb. It has not been generally practiced, although some of the peach growers have practiced it in an indifferent way.

THE PRESIDENT: Have you anything further to ask of Mr. Lupton? I would say that we do not propose to let Mr. Lupton get away from us, but if any of you have anything that you wish to ask him, now is your chance. We want to get as much out of him as possible.

If there are no further questions I would say that the time for our adjournment has already passed and if there is no further business—

THE SECRETARY: Mr. President, before we adjourn I want to call your attention to the fact that a report has been handed in from the auditing committee. The report is as follows:

We have examined the books of the treasurer, Mr. R. A. Moore, and compared the vouchers therewith, and find the same to be correct.

GEORGE W. STAPLES,
ALBERT B. PLANT,
Auditing Committee.

THE PRESIDENT: If there is no objection this report will be accepted and the meeting will now stand adjourned until 1.30 this afternoon.

AFTERNOON SESSION.

The afternoon session, which was called to order at 2 o'clock, was very largely attended. Both in attendance and in the interest and enthusiasm displayed in the subjects under discussion, this session holds the record in the history of the Society. The leading topic of the session was "Apples," and, together with the prominence of the several speakers, no doubt accounted for the strong interest in the program.

After calling to order, President Gulley said:

I want to say that if there are any of you too bashful to ask questions, we have a question box here in which you can place your questions at any time during the session, and they will be opened before the end of the meeting and the questions taken out and read.

I wish to say again, as I said at the opening of the meeting, that if there are any visitors here from outside of the state, we wish they would come forward and make themselves known, so that we may receive them and give them proper care and recognition.

Mr. Eaton, who is the first speaker on our program for this afternoon, doesn't seem to have reached here yet. As he is not present, we will pass his address for now, and I will introduce to the audience a speaker who has been with us before, and whom many of you have met. I am sure he will give us a very interesting talk. I take pleasure in introducing Mr. T. E. Cross, of Poughkeepsie, N. Y., who will give us the first address on this important subject of apples.

A Few Thoughts on the Production and Marketing of Apples.

By T. E. CROSS, Poughkeepsie, N. Y.

Ladies and Gentlemen: It gives me great pleasure to be with you on this occasion. Last year, as some of you know, through circumstances which I could not control, I was compelled to be absent. I was, therefore, more than pleased when

I received an invitation from your secretary to be with you this year.

When I was a boy, my ancestors used to occasionally drive through Connecticut, and whether it was from observation and experience, or whether it was from their say-so, I used to hear a good deal about Connecticut people and "Connecticut apple-jack," and I believe in those susceptible days I did hear something about the famous Connecticut "wooden nutmegs," to which my friend from Virginia referred this morning. I never supposed, however, that you would have to go to Virginia to get the wood to make them of, nor do I believe this state will ever have to get the apples to manufacture your "apple-jack" from any other state, for I believe you can raise enough in Connecticut without going elsewhere.

Coming from the Hudson River valley in New York state, as I do, my experience in apple growing is based upon my observation in that locality, but as the Hudson valley almost touches your western counties, you can readily see that, as we are such near neighbors, having the same climate, similar soil, the same insect and other pests to combat, and practically the same market conditions, whatever affects the Hudson river districts must also affect New England in a similar manner. What affects one locality affects the other.

The growing and marketing of applies is now an entirely different proposition from what it was a generation ago, and it requires entirely different methods, both in the growing and selling, to what it did then. The time was, and not so long ago either, when apple orchards were planted and then left to the tender mercies of the elements, and with but little help from their owners, and it is surprising that so many of them, under such conditions, did in time reach maturity and produce profitable crops of fruit. It seems to me that they do remarkably well in Virginia, and it is surprising that they are able to produce such fine crops, particularly of cherries, as Mr. Lupton described to you this morning, under the conditions that they have there. Of course, it must be largely due to the character of the climate which they have there. We are not so highly favored in this country as they are there.

We have to fight for all we get. Back in the days when our fathers and grandfathers set out some of the orchards, in those days the soil had not been impoverished, it was full of humus, and was more nearly in its virgin fertility than at present. The San José scale was unknown. The codling moth, canker worm and other pests, now so troublesome and costly to contend with, were but little known, and it was no trouble whatever to produce good apples at little expense, compared to the present costly warfare we are compelled to wage for our orchards and their fruits. Again, the marketing conditions were entirely different. There were few peaches grown, and, therefore, an orchard that produced early summer apples, and a succession from that time through the winter months, was profitable in the extreme, while at the present time there is but little profit in the summer varieties, except in such localities where the other fruits are high in price. In those days the orange and banana were rare and costly fruits, and came in competition with the apple to a very small degree, while now millions of boxes of oranges and ship-loads of bananas are each week dumped on our docks, all of which divert the American people from the apple-eating habit. With the great annual increase in the production of these tropical fruits, the competition with the apple is growing fiercer all the time, and the apple growers must combine and stand together, for all that will be to their mutual benefit, or they will lose their markets to a greater extent than ever.

There are many agricultural writers at present who indiscriminately advise their readers to plant apple orchards, without regard to the man, the location, or other conditions. Only last week I saw in one of our most representative papers such advice given, and, if every one were to take that advice, in a few years to come there would be thousands of disappointed city men who have bought farms, planted apple trees, and who are now waiting for them to grow to maturity, knowing that when that time comes they will be able to retire from their strenuous city business and live like princes from the product of their apple trees. Now this, I think, is all wrong. The

apple business is already overdone, and if one-half of the trees now in bearing were to produce half a crop each year there would be such a deluge of apples that they would not pay for the picking, packing and selling, and there would be nothing left for the producer. This applies to the man who produces the *common quality* of fruit, for there will always be a market for the *best*. We have had a very strong illustration of this point in the past season. While the wind in September blew off thousands and, perhaps, millions of barrels throughout the apple growing sections, yet in the face of those facts people that had apples allowed millions of bushels to lay on the ground and rot, because there were no buyers around to take them. The buyers had been losing money for the last two years, and they were afraid of a repetition of the experience, and therefore they held back. There was a time when in the hotels of Rochester and Syracuse the apple men monopolized the hotels. The hotels were filled with apple buyers. They all combined to a certain extent and agreed not to buy unless they could buy at a certain price, and that price was lower than the apple producers had expected to get. For that reason the picking and marketing of the crop was delayed for several weeks, or until almost into early winter, when the cold weather came on and caught some of them, and then they had to sell their apples at the buyers' prices, and there were not many of them. I am afraid, that got what they ought to have had. The result was that there were thousands and thousands of barrels that rotted on the ground. If that was the condition last year, what will be the condition when these hundreds and thousands of trees that are being planted all over the country, come into bearing?

There are millions of apple trees that have never paid for themselves, and that never will, and there are more millions that will bear for the first time in the next ten years that will never pay for themselves, and yet people, who can grow good crops of hay, corn and wheat, and produce dairy products at a profit, will continue to plant apple orchards at a loss. With the great increase in the price and demand for cereal products, hay and dairy products, one may well consider very carefully

before planting an apple orchard. Until one has gone through the trials and paid the expense of growing an apple orchard, they fail to realize what it means. I have a friend who is an apple grower. He planted an orchard seven years ago of 35 acres. He estimates that it has cost him, up to date, more than \$225.00 per acre, and he has not picked a crop yet. This man will make his fortune from this orchard in time, as it is admirably situated, has had the best of care, is planted with three of the best and most profitable varieties for his locality, and, above all, he is an expert apple grower. How many in this audience would have the capital, patience and ability to develop such an orchard as that?

I do not wish to be pessimistic on this subject, as I am a firm believer in the future of the apple business for those who are willing to care for their trees in the proper manner, and who know how and where to sell the fruit to the best advantage; but I know there are thousands of men who would be better off financially to-day if they had not planted any apple orchards. As an illustration, one of my nearest neighbors twenty years ago planted about five hundred apple trees, largely Baldwins. He struggled along, hoping against hope to get some proper return, but he was growing to be an old man, and the tide seemed to be against him, and finally two years ago the farm was sold under the mortgage to another man. Now, the man who planted the trees thought, as many others do, that it would be a waste of good land not to save the hay that grew under those trees, and he, for years, had been getting good crops of hay, but he wondered why his apples did not grow more and better. The new owner mowed the grass and let it go down, and the second year he had fifteen hundred barrels of as fine fruit as I ever saw. The orchard has now gone into the hands of the right man, and he will make money from it. That is one side of the picture. On the other hand, if one has land which is adapted to the production of apples, and is able to grow the trees up to a bearing age as they should be grown, and above all and beyond all is up in the little details that go with the business, I say by all means plant apple trees, and you will receive a rich reward

when the time comes. The fruit business, like all other lines, has become specialized, and the need of specialization becomes more apparent as the years go by, and the specialist will make money while the novice will make a failure. It is coming to be so in every line of business, and especially in every branch of farming. The dairyman, if he is onto his job, has got to take every means within his power to make the product of his cows the best. There is room at the top, but, while that is true, there is a mighty small platform at the top, and the man that once gets there has got to struggle mighty hard to maintain his position. We have got to have everything in the best of condition and keep it there. The farm in all its branches has got to be right up in tip-top shape. Everything, as I say, is becoming specialized. Farming particularly, in all its branches, is becoming more and more specialized, and the man that doesn't pay careful and constant attention to every little detail can not make a success in the dairy business. That is so in all lines, but the truth of that statement was never better illustrated than it is in farming operations at the present day. I don't care whether a man is trying to grow fine fruits, or whether he is carrying on a dairy farm, or trying to do general farming, he has got to pay the most careful attention to all of the little details, and be right up to date and wide awake all the time, in order to be successful. And just that sort of thing is becoming more and more necessary with the man that grows fruit. It is something that is going to increase, rather than diminish. The demand upon the thought and care of a successful fruit grower is going to be a larger burden than it ever has been before.

In planting an apple orchard the location may make the success or failure of the orchard. The land must be well drained, and the more elevated the better. An apple tree will not thrive with wet feet, nor will it produce an annual crop of fruit if the situation is so low that the air drainage is deficient. The reason why some orchards seldom miss a crop, and some others near by with the same apparent advantages seldom raise a crop, is more likely to be found in the fact that in the first orchard the fruit buds are seldom injured, because

the trees are surrounded by ground on two or more sides that is much lower than the orchard, thus giving the cold air a chance to settle away from the trees, while the orchard that seldom has apples will be found where the above conditions are reversed.

In buying trees the greatest care should be exercised. One has the choice of many standard and reliable nurserymen, whose reputations are established and whose word is to be relied upon, and they can be relied upon to sell only good stock, and to deliver what they sell. On general principles I would avoid the traveling tree agent above all others, unless he represents some reputable firm. Let no man beguile you into buying a large assortment of varieties for a commercial orchard, as you will certainly regret it when the trees come to bear. Select two or three good varieties that do the best under your conditions. Two or three good varieties, that do the best under your conditions, are much more preferable than a large assortment. Buy only first-class trees, and take nothing else. Then plant them carefully, and you have just begun. The experts and professionals, almost without exception, say that we must cultivate our trees intensely to get the best results, but Mr. Grant G. Hitchings, of Western New York, tells us to mulch them thoroughly, and Mr. Hitchings has taken more premiums at the New York State Fair, during the past ten years, than all his competitors put together, from apples grown on an orchard that has been in sod since it was planted. Mr. Hitchings' success is certainly to be considered as a great object lesson for those who do not believe in his methods. Personally, from my own observation, I believe in a young orchard it is better, in order to secure the best results, to handle the trees with greatest care, and to cultivate thoroughly, so as to give them a good start. When those trees reach maturity and begin to bear fruit, then, of course, is the time that the owner's interest in them is most thoroughly aroused, and it is the time when he must use all the means at his command to fight the enemies of his fruit in order to secure the legitimate reward for his labor of the past years. I assume, of course, that the trees have been carefully pruned

each year, care having been taken that no branches have crossed, that no bad crotches have formed that will weaken the trees under a load of fruit, and, above all, the middle of the trees should be kept open so as to allow the sun and air to enter and color up the fruit and keep it dry, thus preventing to a great extent damaging fungous troubles. There is a good deal in that, and there is a great deal of difference in what apple trees do among the different varieties of apples, regardless of differing treatment, too. There is a great difference among varieties in regard to the results that you get from them in the way that you treat the trees. With an open headed tree there is much less trouble in thoroughly spraying every part of the tree and every apple thereon, which should be carefully and repeatedly done during the growing season. That is particularly the case with the Northern Spy and some kindred varieties that produce such rank growth of wood. It is absolutely necessary that the tops of such trees as that be opened up in order to secure anything like a successful coloring of the crop. The Northern Spy grows very thick, and produces a tremendous amount of wood, and, unless the branches are thinned out, so that the sun can get in, your fruit will be lacking in color, and will be lacking in those qualities which make it such a favorite among the buyers of good fruit, when it is raised to perfection. Those who have examined fruit from the Rocky Mountains and Pacific Coast States remark on the wax-like color and texture of the skin, and attribute it to the peculiar nature of the climatic conditions there. When we learn that the successful apple growers in that region spray before the fruit buds open, and then just after the petals drop and every ten days thereafter, until it is nearly time to pick the fruit, we may understand why their fruit is so choice, and this is the fruit that sells for two and three dollars for a forty-pound box on the cars at their railroad stations. Eternal vigilance is surely the price of success in growing choice apples. Whether we cultivate our orchards after they come in bearing, or mulch them, we must give them the very best possible care, and we must spray. Experience has proven that it is the spraying that does the business every

time. I am a sort of a crank on spraying. From my own experience I have learned that it is simply a question of spraying or getting nothing at all. If you do not spray, the codling moth is very apt to get the best of you. I know it is so in our section, and I dare say it is just as bad here, or is becoming just as troublesome a pest. If we do not spray our apples we really do not have any apples. By spraying in time, and spraying often, and thoroughly saturating the interior branches and twigs, so that no spot or surface of the growing apples escapes being touched with some of the mixture and poison for the codling moth and other insect pests, then we are pretty sure to get some good fruit. Experience has amply proven that apples may be grown that will be ninety per cent. free from codling moth by persistent spraying, and this from trees that without the spray would produce no first-class fruit. In our orchards our Northern Spy trees never produced a barrel of saleable apples until after we commenced to spray, and by thoroughly spraying we can grow them absolutely perfect. I believe, and in fact I know, with the market conditions as they are and the value of good apples the way it has been in recent years, if we took the utmost pains to offer only the best fruit for sale, I believe that the effect would be that the apples would be worth just about double what they bring in the market. I know that the price would be increased if everybody would spray, provided, of course, there was a market that would take all the apples that we could produce of that quality. But there is no use talking about it, everybody ought to understand nowadays that it would increase the value of his orchard pretty nearly double if he would spray his trees, and spray so as to get the best result of that spraying. Personally, I am satisfied that a higher colored and a better keeping apple can be produced on sod ground if the conditions are right, than on cultivated land, and the labor required is very much less. I want to qualify that statement in this manner. I believe in this climate and in this latitude we should do all we can to cultivate our young orchards so as to bring them into a bearing age just as soon as possible. Life is short, and I do not believe any of us want to wait any longer than is necessary before our trees

come into bearing. It will certainly take five or six years longer for them to reach a bearing age in sod, or at any rate it will take some little time longer, but it costs money to cultivate this land, and especially if you are going to cultivate it as it should be done. Perhaps some way may be suggested yet by which we can get our trees into bearing sooner than can now be done by following the sod method.

One of the complaints that we hear of is, with regard to the early dropping of the fruit from unsprayed trees. As a matter of fact I have never heard that complaint about trees that have been sprayed. The reason is not difficult to find. The life and vigor of the tree, and of course of the fruit as well, depends very largely on the foliage. If the leaves begin to turn yellow and drop early in the season, you may be sure that the fruit will soon follow, if it has not already dropped, while in orchards where the leaves cling tenaciously to the twigs the apples will be hard to pick until late in October.

In picking our King apples we find it difficult to get them off the tree until the first of October, while all the King apples in the neighborhood have either dropped off the trees or have been picked several weeks, and this, beyond doubt, is the difference between spraying and not spraying. I believe it is simply because those trees are thoroughly sprayed, and the apples are protected from insects, are protected from ravages of fungous growths, so that the substance of the stems and the twigs remain strong and healthy, thus enabling the fruit to stay on the tree until it has reached its natural period of life. I know, in a good many cases that I have observed, where there was not much attention paid to early spraying, that the fruit has begun to drop, in some cases, probably six weeks before it ought to have done. Before we began to spray our trees thoroughly it was almost impossible for me to pick a barrel of choice Northern Spy apples. I do not think a man could go in and get a dozen samples of really perfect Northern Spy apples. Since we have practiced spraying so thoroughly and commenced to apply the Bordeaux Mixture and Paris green thoroughly to those Northern Spy trees, I do not believe we have had five per cent. of those apples affected by the codling moth. I do not say this in any

boasting spirit, but simply to show the difference between trees that are sprayed and those that are not sprayed. And what is true of the Northern Spy is also true of some other varieties. The Northern Spy is a mighty good market apple, and it is foolish for a man to complain on the ground that he can not produce a Northern Spy that is fit to send to market. We can get just as good Northern Spy apples as of the other varieties if we go at it right, and there is no question but the Northern Spy in the New York market, where they are known, will bring good prices right along. I know to-day that I could take a hundred boxes of choice Northern Spy apples, well selected, high grade fruit, and get from two to three dollars a box for them, in bushel boxes. They wouldn't be worth a dollar and a half a barrel if they were not perfect.

In order to get the best returns for our fruit it is necessary to grow such varieties as are in demand, and for which high prices are paid for the right quality, and we must make these of the right quality if we expect to make any profit in the business.

In selling our fruit the quality and condition of it, of course, count for much, and the appearance must also be taken into consideration. If fruit is of the right quality and properly packed in attractive packages, and if it is consigned to reliable commission houses, it will, as a rule, sell for its true value. For the man who is to ship to the city and sell through commission houses, it is good policy to select from among them some good reliable firm and consign all your fruit to that house. By so doing you will establish your brand with the customers of that commission house, and if you pack honestly and have choice fruit, there will eventually be a demand among the customers of that house for your brand of apples, and your brand will always sell, but unknown marks of fruit will find no one to buy. I think that is a very important thing to look out for. In the fall of the year, when apples are going to market, and especially in years when there are plenty of them, sometimes good apples are sold at a sacrifice, so that the owner gets little or nothing out of them. I know of a case where a consignment of apples was sent to New York a short time ago to a commission house,

and after a few days the commission man sent the owner back a bill for balance due on the commission, and the owner was complaining because he got nothing for his fruit. The commission man sent him back a statement showing that it cost 17 cents more to sell those apples than they sold for. Now there was only one of two things at fault in that man's case. He either packed those apples in such a poor condition, or in such a careless way, that they wouldn't bring anything in the market, or else the commission man was a thief. I do not believe that the conditions last fall were such that a barrel of apples that were packed in a proper manner would not sell for less than the cost of transportation and the commission added. I told him so, and he said that the fault must have been with the commission man. A great many apple growers have established customers of their own, so that they can dispense with the commission man, but there are a great many growers who, of course, have not done that, and from their situation can not do it. ' With them the commission man occupies just as necessary a place in the selling of fruit as the producer does himself. It would be absolutely impossible for a small grower to reach the consumers in a city market. Here in Connecticut you are more favorably situated than we are in New York State, or than they are in Western New York, or in the far West, for the reason that you have a great many large cities, containing a large number of inhabitants, and the people are constantly employed in the mills and factories, and getting good wages. That is what makes a good market. Good prices prevail. If you will use proper means to develop your markets that are near at hand to you, you ought to be able to sell an immense quantity of first-class fruit. You have your home market at your very doors, and you ought to be able to get good prices for your fruit, and you can get good prices for it if you are only careful to raise good fruit and put it on the market in first-rate condition. It doesn't pay to send fruit to market with a few good apples on top of the barrel and a lot of nubbins underneath. The man that buys that kind of trash of you once is not coming back for a second order.

Of course, each man must be his own judge as to the best time and place to market his fruit. Some will find it to their advantage to arrange to hold their fruit until winter, and others, under different conditions, will make more by letting it go when picked. If one has a good local market, and grows good fruit, he should have no difficulty in selling for profitable prices during the winter, after the other kinds of fruit are out of the way, but if he is to ship any distance, by rail, I believe it better to let the fruit go when picked, either to the local buyer or to the commission house in the city. In shipping by rail in winter the freight service is so uncertain unless in carload lots, that it is too risky to ship on account of frost, and the express charges are so high as to be prohibitory, and there is the same danger of frost when shipped by express that there is when shipped by freight, so that by shipping when the apples are picked these risks are avoided, and the money is in hand for immediate use. The shipping and selling of fruit in winter is a business by itself, and the ordinary farmer will not be able to master it so as to successfully compete with those who make it their business.

There is one thought in this connection that has come to me. I believe it is worth elaborating upon a little. My friend from Virginia reminds me of it. In Western New York, where they devote such large areas to the cultivation of apples, and in the Shenandoah Valley of Virginia, apples are produced in such a way that the buyers can go to those sections and buy all the apples they want in a week's time. The people who make a business of buying and selling apples are educated up to a standard, and the growers who deal with them after a short time become thoroughly acquainted with what the buyers want, and know how to pack to such a degree of perfection that they can be trusted. I think that is usually the case. Where the producer does the packing and ships off to a distant market, without understanding fully the conditions that exist in that market as to what is demanded in the packing, the producer, of course, is apt to make a mistake. Where the commission man or the buyer does the packing, and the producer has nothing to do with it, then, of course, it eliminates all of the danger which otherwise might exist

for fault finding. I wish that the conditions which exist in Western New York and in the Shenandoah Valley existed with us. I am sorry to say that in the Hudson Valley we are still dependent on the city commission houses for the sale of our fruit. There are not enough good fruit men in any particular locality up there to induce the larger buyers of apples to come in there with the expectation of buying a large quantity, and the growers all have more or less complaint to make. Some of the buyers and houses that have taken apples from such sections say that they have been scorched so and robbed by the men that pack the apples that they are going to stay out of there. That makes the situation rather bad for all growers, and I suppose it is nothing but what we must rely on time to correct.

In packing apples too much emphasis can not be laid on the necessity of making each package and each grade uniform throughout. If you are making a package of fruit fancy, be sure that every apple in that package is up to the standard, and sell the lower grades for what they are worth. By making your grades uniform your commission man will be able to recommend your goods to his customers, and he knows that they will prove as good as they should be. There is a certain class of people who buy fancy apples, no matter what the cost, but the bulk of the apples sold must go at a moderate price, or the people will not buy them. It is to the working man and his family that we have to look as buyers of our apples, and we must place before them a good quality of fruit at a moderate price. With apples selling to the retailer at two dollars per barrel there will be perhaps twice as many apples consumed as there will be when sold for one dollar more, and in years of great plenty, such as last year, no matter how cheap the price goes, there will not be a sale for all that are produced. Therefore, those men who grow the best fruit are the ones who can sell when prices are low. I have never seen the day when a man could not sell choice fruit at good prices. I can go to New York and sell apples of the best quality for two dollars a box, when the common run of apples that are sold by the commission men will not bring one dollar a barrel. The people that are used to buying first-class fruit

will insist upon just about such a quality year after year, and to that particular class of people the price makes very little difference.

The bushel box is a very convenient form of package for fancy fruit, but it will never pay to pack in it anything except fancy stock, and it must be very carefully placed, else the fruit will be in a worse condition than if packed in a barrel. It is very difficult to pack apples in boxes so that the layers will come out just tight enough to prevent the fruit from shaking, and not so tight as to cause it to bruise, and only an expert can pack for shipment any distance. For the choice fruit that goes on the rich man's table, the box is the best package, but I believe the apple of the common people will be packed in the standard apple barrel for many years to come.

Now, Mr. President, certainly to an observing person who has examined the different fruit exhibits at the different fairs and societies, and winter horticultural meetings, there is shown a wonderful improvement in the quality of fruit, and this I believe more than any other one thing goes to show what a far reaching influence these meetings and the competition that is brought about are having. I have noticed it not only at the meetings which I have been fortunate enough to attend, particularly the meetings in New York for the last two years, but at many different shows of fruit in our own State. I believe it is safe to make the statement that many of the apples that are sold to-day as No. 2 are almost as good as the apples which were sold ten years ago for No. 1. There has been a wonderful improvement. We can see it in these exhibitions, we can see it at the different fairs, and we can see it from year to year. We can see the improvement from year to year in the quality of the apples over those that were shown the previous years. We can see a vast difference in favor of the later produced apples over those of several years ago. Now what is the reason for this? I think I can explain just what the secret of it is. If I am interested in producing apples and I come here to your fair with a box of different varieties and place them on exhibition, it may be that I am not well up in the art of picking or packing those apples, and it doesn't take me long to find out that I have got a whole lot to learn.

When I come in here I have to rub up against the fellow that has been showing his fruit and has learned a lot of things that I don't know anything about. I have to rub up against the fellow who has been watching the judges when they scored those apples, and who has watched them when they have taken up those apples and looked them all over. Perhaps I have been in here two or three times and have gone away wondering why it was that I have not taken a prize. Naturally I have wanted to find out what was the matter. By and by, little by little it begins to be clear to me what standard first-class fruit is, and I go back on to my farm determined not to raise anything else. Hundreds of times fruit that the exhibitor thinks is first class in every particular, when the judges come to examine it, is found to be blemished from insect attacks. Now if I am any kind of a fellow at all I am going to learn something from all that. I am going to learn to bring something to the fairs and exhibitions that has not got any defects in it. I am going to raise standard fruit, and I am going to keep at it until I do. Now it seems to me that that is just the situation. There are a whole lot of men all the time learning what constitutes first-class fruit, and it is having a wonderful influence all along the line to improve the quality of our apples. The men that can not keep up with the procession have got to quit. And that is not the whole story either. A whole lot of people who attend these fairs and exhibits are learning what apples ought to be, and that helps to increase the demand for first-class fruit. I am selling apples in the City of Poughkeepsie to-day, selling apples for seconds that ten years ago would have gone in there at first-class price. People that I am selling No. 1 fruit to will not touch that other grade. They are a lot of fancy grocers, and just as soon as they find any of that lower grade they will have them right out, and tell you that they are not in the habit of selling a Number 2, and that they would rather pay you for the No. 1 and have you take the other lot away.

Now I believe, Mr. President, that the results that we see on the apples in these different horticultural shows can be very largely attributed to the usefulness and activities of the different horticultural and pomological societies throughout this

country. Let the good work go on. The more of these valuable meetings we have, the better it will be for the fruit business, and the better it will be for the different men that are producing these apples. The time is coming when if a man does not grow choice fruit he can not sell anything.

Now, Mr. President and ladies and gentlemen, I thank you for the attention which you have given me, and if any one has any question, or has any suggestion to make, if I can help you out any about giving you the benefit of what little knowledge I have about the apple business, I shall be only too glad to respond.

THE PRESIDENT: Now is your opportunity. Mr. Cross knows what he is talking about. I have done a little work with him once or twice, and I know that he knows a whole lot about apples. Now has anybody any questions to ask?

MR. LUPTON: Mr. President, "the gentleman from Virginia" seems to have made some sort of an impression upon the gentleman from New York, but just what that impression is there seems to be some doubt. Virginia is in the minority here to-day, but Mr. President, minorities since time began have shown the majority the benefit and wisdom of a moderate course and perhaps a better way altogether. Now I have felt very much encouraged since listening to the gentleman from New York. I feel like going back to Virginia and telling my people that we are safe from competition so far as New York is concerned. (laughter). Now there is a lesson that we ought to learn from what the gentleman from New York has stated. He says that last year the growers and buyers got into some difficulty so that the growers were very late in putting their crop on the market; that the farmers couldn't sell their fruit, and the apple orchard men were unable to make favorable terms with the buyers, and that as the result of their quarrel that they got into, the growers got caught by the cold weather coming on, and they wasted a lot of fruit because they did not have a proper opportunity to box or pack their fruit, and the buyers were at the hotels waiting for the growers to accept their prices. Well, ladies and gentlemen, that was a surprising statement for me. I never expected to hear a thing like that from the State of New York. What would you think if we

farmers should do that? What would you say if we waited until some buyers come around and offered us a price which was not satisfactory, and then we made no further effort to sell our crops. What would you think of an Ohio farmer, or a farmer in any other State, that sat down and waited until his crop was already in bearing before he got any one to come along and buy it? It doesn't seem to me that that is a very sound business principle, and just as long as that method is pursued, or that policy is pursued, the apple growers in Virginia are going to be all right. That is an answer to Mr. Hale's question, too, by the way.

There is another point I would like to make. I think from the standpoint of a member of the Connecticut Pomological Society, (and since I made my address I have joined your Society [applause]) the statement which was made here this morning in regard to a rule covering the quality of exhibits at fairs, is a little erroneous. The chairman of the committee on exhibitions, Mr. Bennett, who made his report this morning, made a recommendation that hereafter one of the rules of your exhibitions should be that no one should be given a premium for any imperfect fruit. I took the liberty, as a member of the society, to tell your reporter and the newspaper men not to publish that statement. The idea of the Connecticut Pomological Society being reduced to the necessity of coming here and making a formal statement that it will not give a premium to Brother Hale or any other man because he says that bruised fruit ought not to be permitted there. That is something that ought to be perfectly understood anyway, such fruit ought never to go into the barrel either. That is the truth of the whole matter. The whole proposition is just here: There ought not to be any difference between No. 1 and No. 2 apples except in size. Wormy apples ought never to go into the barrel. My theory is that a box should contain good fruit, and perfect fruit, no matter what the number. You cannot afford at any time to either exhibit or place inferior fruit on the market. You ought to have your No. 1 and No. 2 boxes made up in just the same way as is the rule in the West.

Now, another thing. A few days ago I took up a newspaper, a Pacific coast fruit paper. I noticed that Oregon ap-

ples are selling in New York City at four dollars a box, while at the same time New York growers are shipping Baldwins as far west as San Francisco and under-selling the Oregon apples in that market. That is a good thing for the service, but it seems to me that that contains a little lesson which we ought to learn. If the Oregon growers can ship their fruit to New York and get bigger prices than the eastern growers, there is certainly some reason for it. There is certainly something wrong about the way in which we handle our fruit. Possibly it is because some inferior fruit gets in in that way and tends to hold the average price down. You do not want any inferior fruit on the market. We do not want anything but good fruit on the market, and I am really surprised to think that the fruit growers of New York State should so far forget their business principles as to get caught in any such snap as the buyers seem to have worked on them last year, according to Mr. Cross's statement. When the apple buyers came down to Virginia they commenced to tell the same story, that there was an enormous crop and the price was low, and all that sort of thing. They wanted to buy our apples, but we said "No, you cannot have them." The apple buyers came into our section and said "We can get apples cheaper home," but afterward they came around and said "We have got a market for Virginia fruit, and we have got to take back some Virginia fruit," and so they took twenty thousand barrels. I think it was mainly on account of the quality and the way we handled the fruit. I assure the gentleman from New York that we do not put any wormy apples into the barrels. No bruised apples go into the barrels. No apples that have any punctures of skin go into the barrels. We are very careful indeed in picking to prevent bruises. I have discharged a number of men for being careless in picking, by holding his thumb in such a way so that in breaking the stem it was almost certain to break the skin. That ruins an apple for the purpose of going into a barrel to be shipped.

I am very well satisfied since I have heard the gentleman from New York tell how they do things up there.

MR. CROSS: Mr. President, the gentleman from Virginia said that he was not up here to tell why they did those things.

Now that is my case. I am not here to tell why those people in Western New York allowed themselves to be caught in such a snap, but I suppose in the years that have gone by they have been able to get \$2.50 to \$3.00 for their apples, and when the buyers went there and told them that they were going to buy for \$1.50, the growers rebelled and said that they would have to come to their prices, or else they would not buy them anywhere. I don't know as I blame the growers for trying to get a fair price, and perhaps for holding off a little, and you want to remember that they did not have any of these fellows with big cold storage houses in which the apples of the producers could be stored and taken care of until the prices were better. They had to sell, and the buyers felt that they could afford to wait. They finally compromised, but it was done at such a late day that the growers could not get all the apples into the barrels, and there were a good many of them that went to waste.

MR. LUPTON: Mr. President, there may be some people here to-day that will not be here to-morrow, and I just want to make one statement that I rather expected to make in my address to-morrow. It is in reply to a suggestion made by Mr. Cross, and also in reply to one of the questions on your list. What can you do to avoid such a situation as occurred in New York last year? That is not the exact question, but it is practically the same thing. Now I want to tell you what we have in Virginia. In my home we have a little organization that we call the Frederick County Fruit Growers' Association. We have a secretary, and it so happens that that secretary is also now a member of the Pomological Society of Connecticut. (laughter). That secretary is authorized by that society to put himself in communication with every kindred association in the United States. Last year he must have communicated with nearly 160 secretaries of different organizations, and he secured all the information he could from every agricultural department, and it is a clear fact, but some people there do have more home information than anywhere else we can find it. Now when our secretary has exhausted every means of getting information as to the fruit crop, that report is made to our local organization by the local secretary, so that we have really more accurate

details as to fruit conditions than anywhere else that I know of. The result is that when the buyers began to talk about the enormous crops and low prices we told them it was not so. We simply had our information at hand and utilized it I think very largely. So, Mr. President, we simply told those people that they could not put up any such job as that on us.

Now I do not know whether your local societies do that or not. Perhaps you do not engage in the fruit business large enough here to have such local organizations, but that is what we did for ourselves last year, and we found it was a wonderful benefit in that particular, aside from one or two other little matters. I think if the New York people had put themselves in touch with the market so as to know thoroughly what the conditions of the market were, before they allowed their fruit to go to waste, that they would never get caught in that way again.

MR. CROSS: Mr. President, let me state for the information of the people on the floor, that the New York State Fruit Growers' Association has one of the most perfect systems for gathering statistics in regard to the crops that there is, and it is about as perfect as I believe can be devised, and their report turns out very nearly to the actual result as the statistics have shown. That was very largely the reason why they got left on selling their apples. They knew that there was no such tremendous big crop as some of the buyers tried to make out, but the fact about it was the New York buyers were down there and when they offered such a low price the growers simply fell back and said "We are not going to sell you for such a low price, because there is no such big crop as you say." Then the buyers said "We know better, and we are going to wait until we can get our price. Now either the fact was that the gentlemen did not state that they came to the buyers' prices, or else the buyers had to have some of that kind of fruit. There was little or no difference between the two situations, only the Western New York fellows held off a little too long, and then didn't have time to get their fruit in proper shape to go on the market. In the other case, the Virginia people had a little longer time to pack their fruit. Out in our State the season is

later, and the buyers get together down there quicker than they do in the western part of our State.

THE PRESIDENT: I want to have it understood that we are going to keep these gentlemen here and are going to have a chance to question them several times before the end of the meeting. Neither Mr. Cross or Mr. Lupton is going to get away from us until to-morrow.

Now, if there is nothing further we will proceed to the next topic on the program. Before that, however, I would say that the life and usefulness of this society depends on getting a good big membership. We want to largely increase our membership this year. We are only about in the middle of the thousand members that we ought to have. While we have got a good Society and already have a good membership, we want to make an especially good record this year and become one of the biggest and best in the United States. The more members, and the more means we have to do with, and the more the fruit growers of the State support this society, the more benefit it will be to them. The membership fee, as you know, is only one dollar, and there will be some envelopes passed around among the audience, so that any of you who are not already members will be given an opportunity to join. I hope there will be a generous response.

I may say that in the hall below there is a large exhibit of fruits, and a still larger exhibit of implements of various kinds. You are requested to give your attention to that feature as well as to the meetings in this room, but only when the sessions here are closed. You will find there plenty to interest you. That the exhibits may be properly reported upon, especially in the matter of the fruits, we shall appoint a committee to judge them and award premiums.

A brief recess was then taken, during which the hall was prepared for the next address, which was an illustrated lecture on "The Worst Apple Insects," by Professor W. E. Britton, the State Entomologist.

This very important phase of the apple question was interestingly discussed by Professor Britton and a large number of lantern slides were shown illustrating the various insects and their work.

The following is a brief synopsis of the lecture.

Our Worst Apple Insects.

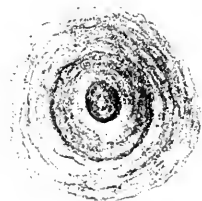
By PROF. W. E. BRITTON, New Haven.

In presenting a paper on this subject I wish to call your attention to the fact that there are over four hundred different kinds of insects which attack the apple in this country. It is obvious that I can mention only a few at this time, and I shall therefore use my judgment in selecting the worst ones. This is largely a matter of individual judgment, and in various localities the degree of injury will vary to such an extent that what may be regarded as a serious pest in one place will be almost unheard of by the apple growers in another.

I finally decided to put the San José scale at the head of the list, because where that is present in an apple orchard I believe it to be the very worst pest we have.

SAN JOSÉ SCALE, (*Aspidiotus perniciosus* Comst.)

I think we will all agree that the San José scale is the most serious apple pest wherever the apple orchard has become infested by it. First discovered in California in 1880, this scale spread throughout the Pacific coast region, was brought toward



San José Scale—Female shell, much enlarged.

the East on nursery stock, and was probably introduced into the Eastern States as early as 1888 or 1889, though not discovered until 1893 in Virginia. It was found in Connecticut in 1895, though it is reasonably certain that it had been brought into this State four or five years earlier. This insect injures trees by sucking out the sap, and is found not only upon the twigs and branches, but also upon the leaves and fruit. Its

injury is not confined to the apple, but peach, pear, plum, quince, and cherry are all attacked.

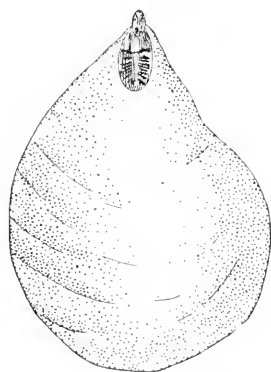
In fact the sour cherry is about the only one of our fruits which is not seriously injured by it. The winter is passed in a partially grown condition, and when spring comes the insects continue to feed and increase in size until about the last week in June, when the breeding season commences. The females do not lay eggs like most other scales, but bring forth living young. When first born, the young are yellow in color, and crawl about for a few hours. They then find a suitable place to begin feeding, insert their sucking tubes in the tissues of the bark and begin to suck the sap. After this they are stationary upon the tree. They begin to contract in length and assume a circular shape. On the back several slender wax filaments are given out, and after three or four days these wax filaments melt down, and the insect molts. The wax and the cast skin form the beginning of the shell or armor. Then comes a period of about four weeks in which the insect is sucking sap and increasing in size. The females keep the circular form of shell throughout their existence, but when about half grown the males can be recognized from the females by their elongated shells, and finally a pupa stage is entered by the males terminating in the appearance of the adults. The adult emerges from under the shell, has wings, legs, antennae and eyes. It flies about, but it does not take food after reaching this stage; in fact, it has no digestive system. The female, on the other hand, remains under the shell, and if we examine a specimen we find that a different development has here taken place. The female has no antennae, eyes, wings or legs, but the mouth parts and digestive system are very strongly developed. Between three and four generations occur each year in Connecticut, depending somewhat upon the season, and although the breeding season is late about commencing, each brood is far more prolific than the preceding brood, and toward the latter part of the season vast numbers of young are produced, and often the trees are coated over completely in a short time. The breeding season lasts until about December first. The San José scale is carried from one tree to another on the feet of birds or insects which may alight on the infested

tree when the young are crawling. This is simply a mechanical method of spreading, and the young scales can probably not crawl over the ground from one tree to another, and can only reach adjacent trees by themselves when the branches interlace.

You all know the methods which we are using to combat this insect. The lime and sulphur mixtures have been used extensively during the past season. More than 100,000 trees have been treated in Connecticut, and in most cases the results have been satisfactory. The boiled mixture has been used chiefly, and the salt may be added or left out; it seems to make little difference in regard to the effect on the scale, and to the adhering qualities. Great promise has been given by some of the mixtures that have been prepared without boiling. You will remember that last year I showed you some of the sodium sulphide that we were using in the preparation of the self-boiled mixture. This could not be obtained in convenient form for use at that time, but it can now be obtained from the Roessler & Hasslacher Chemical Company of New York in a crushed form in drums containing 110 lbs., each at a cost of 3½ cents per lb. In making this mixture we can use about 20 lbs. of whitewash or finishing lime, about 10 lbs. of sulphur and 10 lbs. of sodium sulphide. The lime is started slaking, and the sulphur and sodium sulphide added, and stirred constantly. After the action of the lime has ceased, allow it to stand for about thirty minutes, then dilute and apply to the trees. The caustic soda mixture recommended by the New York Experiment Station at Geneva, New York, has also given good results in Connecticut. This may be prepared by using 20 lbs. of lime, 14 of sulphur and 5 lbs. of caustic soda, the caustic soda being added to prolong the boiling, as heat is generated when the caustic soda and the hot lime are put together. This should also stand for about thirty minutes before diluting and applying. The potassium sulphide and lime also gave good results during the past year, and this is a very convenient method of treating a few trees in a garden or back yard. It is too expensive, however, to apply to orchard trees.

THE SCURFY SCALE (*Chionaspis furfura* Fitch) AND OYSTER SHELL SCALE (*Lepidosaphes ulmi* Linn.).

I wish to mention these scale insects and to exhibit illustrations of them in order to show the difference between them and the San José scale. The scurfy scale is pear-shaped, and light-grey in color. The males are much smaller, narrow and nearly white. The oyster shell scale is long and narrow, and usually of the same color as the bark upon which it is fastened. The San José scale is circular in shape. These three species are shown in the illustrations. Both of these



Scurfy Scale—Female shell,
much enlarged.



Oyster Shell Scale—Female
shell, much enlarged.

scales (scurfy and oyster shell) are single brooded and live through the winter in the egg stage. The scurfy scale eggs hatch between the 20th of May and the first of June, while the eggs of the oyster shell scale hatch about June first, or usually about a week later than the eggs of the scurfy scale. The remedy is to spray with kerosene emulsion or soap and water during the first half of June, or while the young are still unprotected by the shells or armor which later cover them. There is very little use in attempting to destroy these insects by spraying at any other time of the year, especially when they are in the egg stage, as it is then very difficult to kill them.

THE CODLING MOTH (*Carpocapsa pomonella* Linn.).

This is the insect which makes our apples wormy, the larva being the common apple worm that we find inside the fruit. The adult is a small brown moth which lays eggs on the young fruit or leaves soon after the blossoms fall in spring. The egg is white, and does not project far from the fruit or leaf upon which it is placed. It looks like a white dot on the green background. Wherever this egg is laid, about nine times out of ten the young larvæ enter the fruit through the calyx cup. Soon after the blossoms fall you will notice that the young fruits stand upright on the stems with the calyx wide open. It is extremely important to spray at this time with Bordeaux mixture containing Paris Green, and to cover the tree so thoroughly that poison is deposited inside of the calyx, so that the young larvæ will get it when beginning to tunnel into the fruit. Soon after, the calyx begins to close up, and finally is closed completely, so that it would be impossible for poison to enter the calyx. The poison should be applied within a week or ten days after the blossoms fall in order to do the most good. We should also keep the leaves and fruit well covered with the mixture for a period of about two months.

There are two broods each year and the codling moth passes the winter in the pupa stage.

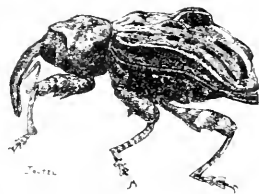
APPLE MAGGOT (*Rhagoletis pomonella* Walsh.)

In some parts of the country, especially in Northern New England, this is probably a worse pest than the codling moth. Though it does not attack so many varieties of apples, it renders some kinds wholly worthless, and there seems to be no good remedy for combatting it. It is especially fond of the early sweet or pleasant-sour varieties, while the very hard and acid kinds are not so liable to be attacked. This insect does not injure the fruit in such a way that we can detect its presence from the outside. The adult is a two-winged fly, which lays an egg through a puncture in the skin of the fruit, and the maggot develops inside, going through the pulp of the fruit and scraping off small portions of it, from which it

sucks the juices. This causes brown spots to be found throughout the pulp of the apple, and finally the fruit decays. Frequently the inside will be wholly worthless, while the exterior surface of the fruit shows no indications of the presence of the maggot. As the maggot is inside, wholly out of reach of sprays, it cannot well be controlled by spraying, though it is said that where trees have been properly sprayed for codling moth the attack of the apple maggot has been somewhat lessened. As a rule, however, we can do nothing more than to destroy the infested fruit, and to endeavor to grow such varieties as are not subject to its attack.

PLUM CURCULIO. (*Conotrachelus nenuphar* Hbst.)

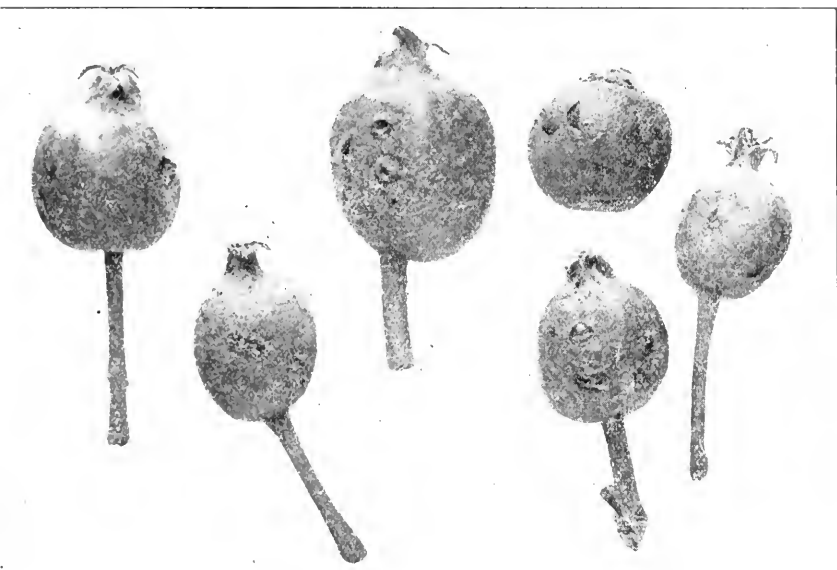
Apples have been seriously injured by the plum curculio during the past few years. The adult beetle punctures the young fruits for the purpose of food, and the females deposit their eggs inside. The egg is white, and oval in shape, and around the egg puncture a crescent-shaped mark is cut to prevent the growing fruit from injuring the egg. It is found



The plum curculio (*Conotrachelus nenuphar* Hbst). Adult beetle. About six times natural size.

that many punctures are made and even the crescent mark is cut in many places where the eggs are not deposited. When the egg hatches, the young larva tunnels through the pulp of the fruit, but, instead of causing it to decay, as is the case with the apple maggot, the wound usually heals, and a hard streak is formed through the apple where this tunnel was made. The general effect is to cause the apples to grow irregular and knotty, and of course the quality is much injured as well. This injury was supposed to be caused by the apple curculio, but this insect is a rather rare species, while the plum curculio is extremely common, and attacks the plum,

cherry, peach and apple. This subject has recently been studied by Prof. J. M. Stedman of Missouri, and he finds that the injury is very serious, but that it can be controlled. Only a small proportion of the eggs laid ever hatch, and a small proportion of the larvae ever reach maturity. The apple does not seem to be a suitable host for the insect. The experiments conducted by Prof. Stedman show that spraying with poisons will prevent much of this injury to the fruit, and that, in addition, if the infested fruit which drops from the tree can



Young apples showing punctures made by the plum curculio.

be gathered and destroyed, and the ground cultivated lightly from the middle of July to the middle of August to destroy the pupating curculios, the insect can be held in check. Professor Forbes of Illinois conducted some experiments in 1904 in spraying the trees with arsenate of lead to prevent curculio injuries. While he greatly reduced the amount of damage, there still remained about 28 per cent. of injured fruit, and he explained this by the statement that in order to obtain the poisons, it was necessary for the beetles to feed upon the

leaves and fruits, and in so doing they injured 28 per cent. of the young fruits before they could obtain a sufficient amount of poison to kill them. The plum curculio is shown in the accompanying figure.

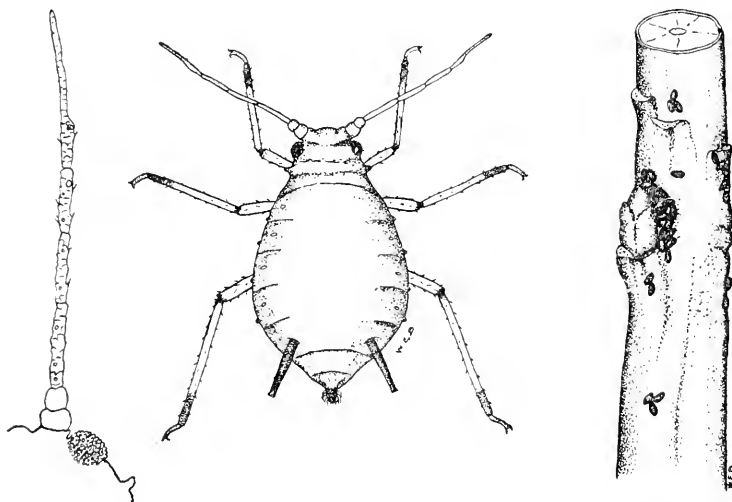
APPLE TREE BORERS. THE FLAT-HEADED BORER (*Chrysobothris femorata* Fabr.) AND THE ROUND-HEADED BORER (*Saperda candida* Fabr.).

In Connecticut a great deal of damage is done each year, especially to young apple trees, by the borers which attack the tree at the base of the trunk. There are two kinds of borers responsible for this injury. One is called the round-headed borer, and the other the flat-headed borer. The round-headed borer is probably more injurious than the flat-headed one. The eggs are laid in slits cut in the bark near the base of the trunk, and these soon hatch, and the larva begins to make a burrow in the bark. As it increases in size it works through the bark and into the sap-wood, where it makes a broad, flat burrow, it working its way downward on the approach of winter, coming back again in the spring, and sometimes going several inches up the trunk. Three years are required for the round-headed borer to complete its full development, and the pupa stage is passed in the burrow. The adult is a long-horned beetle, about three-quarters of an inch in length, brown in color, with two white stripes extending longitudinally. When the adult is ready to emerge it eats its way out of the burrow, leaving a hole about one-quarter of an inch in diameter. The flat-headed borer attacks the tree in a similar manner, but its complete development requires only one year instead of three years, and the adult belongs to a different family of beetles, and does not have long horns or antennæ like the adult of the round-headed species. The larva also differs in that it has a broad, flat head, much broader than the other portion of the body, while the round-headed species does not have a head of this shape. The remedies for the apple borer are to examine all trees in the early fall and again the following spring, and wherever we find the chips or sawdust thrown out at the base of the tree we may be sure that a borer

is at work inside. We can cut into the burrow and destroy the borer, or we can insert a few drops of carbon bisulphide and close the mouth of the burrow with clay, wax or soap, whereupon the fumes will permeate the tunnel and kill the borer inside. These borers are more serious in the vicinity of woodlands, where they probably live in some of the native trees. They are apt to be much more serious in sod land than in tilled orchards.

APPLE APHIS. (*Aphis pomi* Geer.)

During 1903, apple trees throughout the State were attacked and considerably injured by a green plant louse that was found on the under sides of the leaves and the new growth. This is called the apple aphid. Many of the new

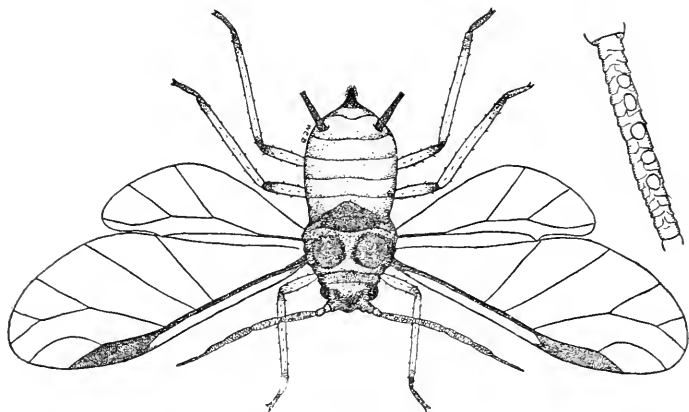


The green apples aphid *A. pomi*. Wingless viviparous female, enlarged. Antenna, still further enlarged, is shown at left.

Eggs of green apple aphid as they appear on the twigs in winter.

shoots were also literally covered by these green plant lice and the growth much checked. In nurseries it was a serious matter, because here the condition and value of the trees depends largely upon the annual growth. The small insects suck out the sap, and do not devour any portion of the tissues.

They pass the winter in the egg state, and we often find these eggs around the buds on the twigs. They are black, shiny, and oval in shape. The eggs hatch early in the spring, soon after the leaves unfold, and the aphids may be found on the leaves and twigs throughout the summer. The appearance



The green apple aphid *A. pomi*. Winged viviparous female, enlarged. At the left may be seen the third joint of the antennæ with sensory pits—very much enlarged.

of the insect is shown in the accompanying illustrations. The remedies are to spray thoroughly with strong kerosene emulsion or with common laundry soap dissolved in water at the rate of one pound to six gallons. During 1904 this insect was not abundant, and therefore very little injury resulted from its attacks.

DISCUSSION.

A MEMBER: Mr. Chairman, one of the facts that was given as an illustration of a method that was used to destroy the tent caterpillar, suggested a question that I wanted to ask. I would like to ask Professor Britton if those can be obtained, and, if so, where?

PROF. BRITTON: The M. Leimer Company, of New York, would manufacture them if there was any demand for them.

A MEMBER: I would like to ask Professor Britton if it is necessary to scrape apple trees in order to remove the rough

bark so as to make more thorough work of the spraying for the San José scale.

PROF. BRITTON: You can get the mixture where it is needed better if the loose bark is taken off. Of course, it is almost impossible to get it in under the loose bark. So I think it is a good thing to do.

THE PRESIDENT: Will Professor Britton tell us whether there is any good way to prevent the ravages of the apple borer?

PROF. BRITTON: I have not been able to find anything that was absolutely efficacious, except digging them out.

A MEMBER: I would like to know if there is any device that could be used to wrap around the trunk of an apple tree, at the base of the tree, or any wash or paint that could be used to prevent the ravages of the apple borer.

PROF. BRITTON: Quite a number of things have been tried. Mr. Lupton says that whale oil soap is a good thing. Also that ordinary paint is a good thing. But in working against other borers I have used strong arsenate of lead. That sticks on the tree for a long time. At least, it will stay there through one season very nicely. I have not used it against this apple tree borer, but I have often wondered why it would not be effective.

MR. IVES: I have been using common coal tar for the last three years on peach trees, and we have only recently found but four or five that had anything like the peach borer on them. And the same is true of some of the apple trees. I think there were no borers found in any of the young apple trees when we made our last examination. They were principally young trees.

MR. HUBBARD: Is tar injurious to the trees at all?

MR. IVES: I never saw peach trees making a more thrifty growth, and I do not think it injures apple trees in any sense whatever. It certainly did prevent the peach borer from getting in his work.

PROF. BRITTON: Mr. Chairman, Professor Slingerland tried some experiments with gas tar, and he found from the results obtained at different places, and under various conditions, that while in some instances the tar caused no injury,

yet it may cause injury to the trees. Tar from certain places may cause injury, while that from other sources is safe. I think it would be well to try a few trees at first, so as to make sure that your tar is all right.

MR. LUPTON: Professor Britton made a statement a few minutes ago in regard to the use of paint, which possibly might be misleading. He stated that I said that ordinary paint would be effective against the borer. Ordinary paint would be apt to kill your trees. You want the very best quality of white lead. If you do not get the best quality, injury is apt to result. So you want to be very careful if you are going to use white lead and oil, to get the pure stuff.

A MEMBER: How are you going to know if you have got the pure stuff?

MR. LUPTON: I do not know except to go to some first-class dealer. I should go to some first-class dealer and get a good quality of white lead and linseed oil, and mix it up yourself.

PROF. BRITTON: I would like to ask Mr. Lupton how would it do to put in a little Paris green in that when you mix it up?

MR. LUPTON: I suppose that that would not do any harm. It certainly would not do any harm.

PROF. BRITTON: If you put in Paris green, and put in enough of it, it would do the work.

THE PRESIDENT: I think we will have to draw this discussion to a close. We have still other speakers on this subject of apples which we must now call upon.

We have had an account of apple growing in Virginia, and in New York, and now we propose to go further north and east and bring on a speaker who was scheduled for the first thing on the program this afternoon. Mr. Eaton, who will now talk to us, comes from far away up north of us, from Nova Scotia, and I know that he will tell us as good a story as we have had from New York and from Virginia, and it gives me great pleasure to introduce to you Mr. Ralph S. Eaton, of Kentville, Nova Scotia, President of the Nova Scotia Fruit Growers' Association, to talk to you about the "Conditions and Methods in Nova Scotia Orchards."

Conditions and Methods in Nova Scotia Orchards.

By RALPH S. EATON, Kentville, N. S., President Nova Scotia Fruit Growers' Association.

"In the Acadian land, on the shores of the Basin of Minas,
Distant, secluded, still, the little village of Grand Pré
Lay in the fruitful valley. Vast meadows stretched to the eastward
Giving the village its name and food to flocks without number.
West and south there were fields of flax and orchards and corn-
fields.

There in the midst of its farms reposed the Acadian village,
There dwelt together in love the simple Acadian farmers;
Dwelt in the love of God and of man.

* * * * *

"Still stands the forest primeval; but under the shade of its branches
Dwells another race, with other customs and language."

Thus sang your sweetest New England poet in his *Evangeline*, which has rendered classic and almost world renowned a most interesting portion of Nova Scotia, from an historical as well as a horticultural standpoint.

Just on the opposite side of the river from "these vast meadows and dikes which the hands of the farmers raised with labor incessant to shut out the turbulent tide," is a picturesque little cemetery where a stone marks the resting place of Major Samuel Starr, who was born in Norwich of this state, and the first of my mother's family to come to Nova Scotia. This was in 1759. A farm of two hundred acres, a mile west of the court house in that town, is said to bear his name to this day. An Empire Loyalist, and one of a committee from Connecticut to examine the fertile lands vacated fifteen years before by the French Acadians, he afterwards settled where is now in sight of the Grand Pré village, one of the finest fruit districts of Nova Scotia—Starr's Point, the early home of my mother and within a few miles of my own home.

In the little cemetery just referred to, alongside the grave of Major Samuel Starr, are the graves of Starrs of six generations. But four miles distant, at Canard, close beside my boyhood home, is another cemetery containing the graves of

David and Deborah White Eaton, my paternal grandparents twice removed. Deborah was the great, great granddaughter of Elder John White, of this town of Hartford. She lived in Coventry, Conn., married David Eaton in Tolland and came to Nova Scotia in 1761. The wedding ring which sealed that compact was worn by my mother during her married life.

When I received the cordial invitation from your Secretary a few weeks ago to attend this convention, it seemed like a call to render up an account of the stewardship of those relatives and the one hundred and fifty settlers who came with them, mostly from Connecticut, and who, with their descendants, developed the fruit industry which has made our province quite famous. It is a very great pleasure to come to the home country of these forefathers. It affords me great pleasure to be with you. I appreciate the honor which your Society has conferred on me in being selected from among Canadians. But I must tell you that in addition to the pleasure I anticipated in coming, I felt I had a duty to perform. I feel that Nova Scotia in recent years has been under great obligations to Connecticut, an obligation which I should take this opportunity to acknowledge. Not a little of the knowledge of small-fruit culture and of the use of commercial fertilizers; not a little of the inspiration, the enthusiasm for larger projects, the knowledge of how to conduct them and the spirit of hustle which has been absorbed in Nova Scotia, has come from your most generous hearted fruit grower of South Glastonbury, Mr. J. H. Hale. This can be very distinctly traced in the large and small fruit industry of our province, and many are the expressions of gratitude I have heard from our leading fruit men for the unfailing kindness in answering at length their numerous questions plied from time to time. Some men claim to have horticultural secrets. There seems no knowledge in this man's possession too good to give away. Truly, with him it seems more blessed to give than to receive.

Before referring in particular to this industry, which has made Nova Scotia known among more people in the world perhaps than any other of its products, let me refer just

briefly to some other industries of this province that so many people of your country picture as a wood-covered, snow-bound land. This little peninsula produced last year :

Coal, worth	\$13,000,000
Gold, worth	500,000
Iron ore, worth	50,000
Other minerals, worth	605,800
Pig iron, worth	3,100,000
Steel, worth	2,730,000
Manufactures, worth	41,000,000
Field crops, worth	8,500,000
Fruits and vegetables, worth	2,800,000
Live stock sold, worth	1,600,000
Dairy products, worth	2,900,000
Meats, worth	1,700,000
Products of forest, worth	4,400,000
Total,	<hr/> \$91,925,800

There is another product which outsiders sometimes refer to which can hardly be measured by dollars and cents; it has been said publicly that Nova Scotia produces more brains to the square inch than any other province in the Dominion. In politics she has given to Canada two of its Premiers, and if Sir Laurier retired to-morrow his successor would be Hon. William Fielding from Nova Scotia. The leader of the Opposition has been a Nova Scotian, and although defeated recently in his own province his party cannot find an elected man in the other provinces to take his place, so have arranged for a constituency in Ontario in order to have him still the leader.

In the United States, as well as Western Canada, the all too many sons who have left her borders have usually gained credit in law, medicine, teaching, business, or engineering, but let me say to you, in deepest sincerity and conviction, that in the industry for which this association is formed, in Nova Scotia we have no man to compare with your Connecticut genius, who started in life with no more capital than a clear, brainy head, a stout and merry heart, a generous soul and good constitution, and has grown in but a few years from hand-cart to Hartford trolley, and from Hartford trolley to Georgia train-loads of fruit.

I listened to an address of President Eliot of Harvard University, a few years ago, before the students of the Institute of Technology of Boston, and he spoke of the work of an engineer who built a bridge, or made a tunnel, and he referred to it as being so much more durable, so much greater than the work of a lawyer, minister, novelist, etc. If this is true, what can be said of the man who has changed the crude, worthless form of hundreds of acres of land into orchards of wholesome luscious fruit, taught others how to grow and pack it, developed business for railroads, given employment to hundreds, inspired so many to greater effort, broader knowledge and higher purpose, whom this state is delighted to own and to honor, and whom the National Society of Pomologists did itself the credit last year of electing its president.

Now if you will be generous in regarding these few introductory sentiments, which I feel I could scarcely abbreviate or suppress, I will turn at once to the more practical phase of my subject. This seems but another occasion to realize that as the years go by how much smaller the world seems to be growing, how much more closely allied seem its people, and how greatly the fellowship and brotherhood of man is extended.

Our fruit industry in Nova Scotia was started by the French, who occupied the country one hundred and fifty years before those Anglo Saxons from New England took up the work and with new varieties and larger ambitions extended the orchard areas. A number of the orchards planted by these immigrants are still in healthy bearing condition to-day. I have such an orchard of four acres, probably one hundred and sixty years of age. The principal agency in the fruit development has been the Fruit Growers' Association, established in 1863. In 1870 the fruit shipment of apples began outside the provinces. In 1871 the orchard acreage was recorded at 13,614. To-day the acreage is from eighty to one hundred thousand. In recent years two-thirds of our crop has been sent to England, and has increased about as follows: In 1890, 53,627 barrels; in 1896, 409,733; in 1903, 550,000. This has practically come

from the small area of seven thousand acres, of, if put into a solid block, would be a square of only three and one-fourth miles. In comparing with this 550,000 the crop of the large province of Ontario, which was estimated for the same year by the Apple Shippers' Association, was 547,000 barrels, Maine 500,000, Massachusetts 132,000, Pennsylvania 173,000, Ohio 240,000. In the season of 1901 it is claimed that more apples were shipped from Halifax than from any other Atlantic port on the continent.

Nova Scotia is unique in its fruit development. The crop for export is practically all grown in only two counties, Kings and Annapolis, where the French Acadians and Empire Loyalists took the strongest hold. The larger part of the province is suitable for fruit, but it awaits development. I submitted to our provincial government a few years ago a scheme for a system of several model and experimental orchards as object lessons for each county, owned by the farmers and planted and supervised by a competent commissioner who could secure the best possible care and results and make special effort to encourage a number of farmers around each orchard to follow each year the pattern. This scheme has been partially adopted, and I would expect the development in the other counties to proceed more rapidly than it has in Kings and Annapolis.

INCREASED PLANTINGS.

I have said that in 1904 our product was in round numbers a half million. Inside of ten years Kings County, in which I live, will be itself producing that much. Fifteen years ago the planting of one thousand trees in one season in an orchard was thought to be a large venture, and not more than six persons in the province attained that ambition. To-day that little piece of work would create no comment. Twenty-five years ago, when I used to stand on the head of a barrel to give pressure in putting the head in for my father, he thought if he should grow more than one hundred barrels he could not handle them. With perfect ease his farm has shipped of late years two thousand barrels. Thirty-three

hundred barrels have been taken from one farm. In five years the five thousand mark will be reached and much higher figures will soon follow.

INCREASED LAND VALUES.

The orchard business has increased the value of farms in the fruit districts from two to four times the value of similar areas in other counties. It has changed many acres of our country from a value of ten or twenty dollars per acre to a value of one thousand dollars. It has changed hundreds of farms from a value of two thousand dollars to ten thousand dollars. It has changed a dozen farms from a value of two thousand dollars to fifteen thousand dollars, or twenty thousand dollars, and a number of farms to twenty thousand to thirty thousand dollars. The apple industry has probably advertised the province more than any other one of its products, and our fruit has won distinction at such exhibitions as Philadelphia, Chicago, Buffalo, Edinburgh, London and Paris.

NURSERY STOCK.

Since the San José scale scare the major part of our nursery stock has come from Ontario, the larger planters buying direct from the nurserymen. A few thousand are imported annually from New York State. The largest possible three year grafted trees, or two year budded trees, are preferred. The popular distance for planting the standard apple is thirty-three feet apart, or forty to the acre. A few plant eighty trees to the acre, placing the extras in the diagonal of the squares made by the forty planting. Fewer still use forty permanent trees to the acre and one hundred and twenty to two hundred and eighty fillers of plums or early bearing apples.

VARIETIES.

Our most popular varieties of apples are the Gravenstein, Blenheim Pippin, Ribston Pippin, King, Wagener, Baldwin, Golden Russet, Nonpareil, Northern Spy, Ben Davis, and Stark. Though Germany is the home of the

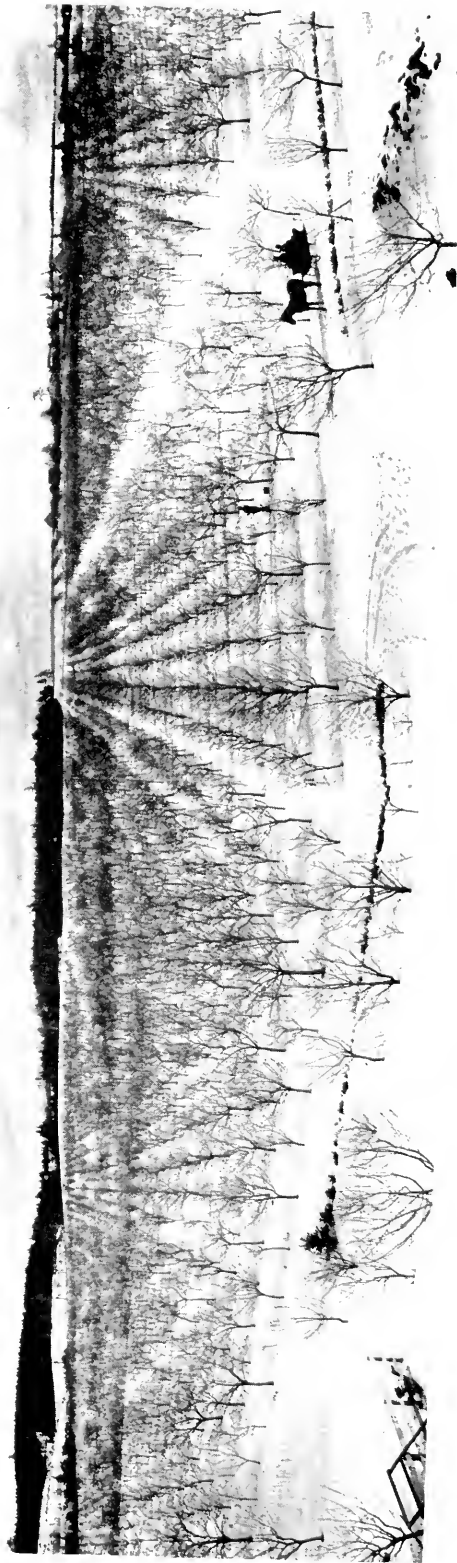


Plate III.—View of the Hillcrest Orchards of Ralph S. Eaton, Kentville, N. S.

A one-third section or thirty-acre block containing about 9,000 trees. The trees in the foreground are from five to eight years of age and $8\frac{1}{2}$ feet apart. They are branched low and cultivation is done lengthwise of the rows, which are $16\frac{1}{2}$ feet apart. The permanent trees, 33 feet apart, are filled between with early bearing apple, plum, dwarf pear, peach, cherry or quince.

Gravenstein, Nova Scotia can beat Germany in growing this variety. Though England is the home of the Ribston Pippin, Nova Scotia can beat England in growing Ribston Pippins.

Our Baldwin and Ben Davis are not as large and fine as are grown in some States of this republic, but the Blenheim and Nonpareil with us can hardly be excelled.

In plums a fair proportion of the Japanese varieties have been planted during recent years, perhaps too many. Their general adaptability has yet to be proved. The Burbank was first planted and is yet the most popular. The Abundance cannot be depended upon for a crop.

I have one thousand of the Red June and the older ones, though six years of age, have not given me a crop. They blossom well, set fruit, leaves become perforated in mid-summer, turn brown and drop. The fruit soon follows. Spraying with ordinary Bordeaux makes matters worse. The Wickson will not stand our winters, and I fear if it did it would not be popular on the market. We have very few of the Chabot. I am trying one hundred of the October Purple. Of the European varieties the Monarch, Grand Duke, Reine Claude and German Prune are proving our best. The old Magnum Bonum and Damsons are very popular still, though not much grown. The Reine Claude promises to take a leading place for canning.

PEACHES.

We have made a start to grow an appreciable quantity of this fruit. The trees got a bad set-back last winter by the low temperature. This will cool the ardor of the peach enthusiast in our country. Our summers are scarcely warm enough to ripen a large succession of peaches, though we grow a few varieties to a high degree of perfection. We have no use for the cling-stones.

CHERRIES.

We have a beautiful climate for cherries. Of the sweet varieties the Governor Wood, Windsor, and Black Tartarian

are the most popular. Of the acids, the Montmorency and English Morello.

I have grown some luscious apricots, but they will never be a commercial success.

PEARS.

I think our conditions are as favorable for pears as those in California. Our favorites are the Bartlett, Clapp's Favorite, Beurre Anjou, Duchess, Sheldon, and a few others.

CULTIVATION.

Our best orchardists have not got beyond weekly cultivation in May and June. This is done mostly with the disk and spring tooth harrows after or without ploughing.

FERTILIZATION.

On light land that can be cultivated early, the Crimson Clover is sown about the first week in July. On heavier land Mammoth Clover is sown about the first of August as a cover crop for plowing under the following season. The Crimson will almost invariably winter kill. Our largest orchardists use commercial fertilizers almost entirely, from two hundred to four hundred pounds of potash, and four hundred to eight hundred pounds of bone or phosphate rock for mature orchards, and expect from this annual crops.

SPRAYING.

Our best orchardists practice spraying for insects and fungi. The one hundred gallon hogshead with hand pump, low wagon, two lines of hose, is the most up-to-date outfit in our small business. The power sprayers will soon come. The black spot of the apple is our worst enemy. Half the value of our crop was taken away by it last year. It must be controlled.

HARVESTING.

We aim to get our fruit put into a cool temperature as soon as it is picked. Our autumn apples are sorted in our apple houses, carriage houses or cellars, as to convenience

of owners. Our winter fruit is all put immediately in cellars. About half our growers ship direct to England themselves. The other half sell to speculators, who store in large frost-proof warehouses along line of railway. In a distance of seventy miles of railroad there are thirty such warehouses, holding from ten to fifteen thousand barrels each. These are built and owned mostly by speculators and English commission men. Occasionally a company of farmers build one and pack the fruit on the coöperative or company plan. The low dray wagon is used almost exclusively among the best fruit men.

MY OWN METHODS.

In my own business I have incorporated some ideas that I am practically alone in carrying out. It occurs to me that in horticulture, as in theology, some things that were regarded a few years ago as heterodox are becoming orthodox. The main idea is that of getting large returns as soon as possible. I am getting on toward the "seer and yellow leaf" period and would like to get some fun and money out of the business before my hair is completely gray. I am in for fruit, and to those who are situated best for mixed farming my points will have less interest. My plantings are on the intensive system. I have planted the best commercial varieties which do not usually give remunerative crop till fifteen years two rods apart and fill in between these with early bearing apples, plum or cherry to the number of three hundred and twenty or five hundred to the acre. My experience so far shows that I can get earlier returns, and that there is economy in fertilizing, thinning of fruit, picking, cultivation and spraying. These fillers are all branched low, from eighteen to twenty-four inches from the ground, in order to obtain a large surface as soon as possible. When desirable, heading in of trees is thoroughly attended to. The Burbank plum trees need this from the start to make them compact and symmetrical. The tops of no two trees are allowed to interfere. For apple fillers I prefer the Wagener, as it will bear the third year and regularly thereafter. It is very compact, carries its fruit evenly and thickly, is excellent in quality, and

stands ocean transit well if sent off before Christmas. When trees will return \$1.00 each, \$320 from an acre is better than \$40, and it is possible to get this the fifth year from the Wagener or Wealthy apples, or from plums. The cultivation can be easily adapted to the low-branched trees. I believe thoroughly in the thinning out of all superfluous, small or imperfect fruit in July. In plums, good dessert fruit cannot be grown without this. I grow the Japan plums wholly for dessert, and pack them regularly with paper between the two layers, in five-pound square packages similar to the California package; twelve of these packages go in a sixty-pound crate. In this way more than double the price is realized over the ordinary plums in ordinary baskets. My cultivation in older orchards is done with eight-foot harrows, and one man can cultivate comfortably fifteen acres per day, going over the ninety odd acres about once a week. I believe thoroughly in the use of thick paint in all pruning or surgical work among trees and the use of some potash wash occasionally on the bodies of the trees to keep them clean and healthy.

DISCUSSION.

MR. HUBBARD: When do you market your Wagener apples?

MR. EATON: We mean to ship them in December, as a rule. In our colder countries they would stand up well enough to be shipped in January, but the Wagener is a little disposed to deteriorate underneath the skin if kept too late. We have been shipping them in January to England, but sometimes they have not arrived in good condition. Our Baldwins are also disposed to show the same trouble under the skin if left too long before they are shipped to market. I think it is always safer to ship the Wagener in December. We usually make our last shipments of Autumn varieties so that they will land in England about December first.

THE PRESIDENT: I suppose, Mr. Eaton, that where you plant the trees thickly, you say in your paper, that after they get up to a certain point you have to begin to thin the trees

out. How large do you let them grow before you begin to thin them out?

MR. EATON: I have not begun to thin the trees, and shall not for some time yet. That is something that I have not done much of. I have Wagners planted 320 trees to the acre, or I should say they alternate with the Burbank plums. The Wagener trees are now seven years old. I am aware that most persons would regard this as much too thick, but I think there is still room for 320 more and yet a chance for me to do my cultivation. Now, gentlemen, I want you to understand particularly that I am not recommending such an intensive system of planting to you. I know of no one in my Province who has planted as thickly as this, and I know it will be regarded by most everyone of you as extremely heterodox. I am trying an experiment. I would not plant any other variety than the Wagener so thick. There is nothing to lose because I consider it is feasible to have trees that are even as old as eight, ten or twelve years transplanted. I have satisfied myself on that. I have been successful in doing this work for some years.

MR. HOYT: What kind of a package do you use, that is, what way do you find the best in putting up your apples for market? Do you usually ship in boxes or in barrels? I have been in Boston and have seen quite a few Gravensteins that were sent from Nova Scotia, that is, especially in the last two or three years.

MR. EATON: We usually ship in barrels, using barrels with flat hoops.

MR. HOYT: I asked the commission men in Boston how it was that they sold them put up in boxes. I noticed that they turned them out of the barrels and were evidently put into boxes, and I thought that if there was a demand in the market for them put up in that way, it was a little strange why the Nova Scotia men did not ship them in box packages.

I understand you to say that you usually ship in barrels. What size barrels do you use?

MR. EATON: Taking the province at large, there has been a little difficulty in getting a uniform size barrel, or a uniformly made barrel. We are rather proud of the packages

that we use in sending our fruit to England. Of course, the greater part of our apples are shipped to the mother country. Very few of our apples have gone to Boston. The duty, when shipping apples into the United States, is almost prohibitive, but when you are shy of Gravensteins we can usually send you something that is fully as good or better than anything you are getting here. If you have not been getting good respectable looking barrels, I don't know where they could have come from. While we have not always been able to get uniform packages, still there has not been much trouble. We are using the flat hoops on our barrels now. We have for many years been using round hoops. The other presents a little better appearance and we find that it is to our interest to have the best looking packages, especially on shipments going to London.

I have found in shipping Japanese plums that to pack them fifteen to twenty pounds to the box, and ship them as we do ordinary plums, they will not bring as much in the market as some of the purple plums. I decided a few years ago, if I were to ship Japanese plums so that they would sell well, I should have to adopt a different package from that which other men were shipping their plums in. I pack all of my Japanese plums now in a five pound package similar to the Californian, twelve of which go to a crate. I am sure it enables me to sell more fruit and to get better prices. Of course, a good deal of attention must be paid to the grading of the fruit itself, as well as to the package. I thin the fruit on the trees very carefully about the first of July. It is the only way I can get them to grow sufficiently large to sell for dessert, so that I can realize good prices. In that way I have been able to get something which is acceptable in the market. Then, after having been careful in the grading of the fruit, grown to a good size, I place it in these boxes in two layers, four rows in each layer and six plums in each row. I use paper in packing the fruit, which I think adds to the appearance. The paper has a little printing on it like this—

DESSERT FRUIT.

JAPANESE PLUMS

GROWN BY

RALPH S. EATON.

Under this comes some advertising sentences regarding the orchard. Two sheets of paper are used. One crosses the bottom, the other in a reverse direction covers the first layer of plums. These papers lap over the top to that. When the fruit is covered the printing shows on one paper and when uncovered it shows on the other. This white paper with a border figured like shelf paper, contrasting with the carmine colored fruit, adds much to the attractiveness of the package. I have averaged for my Japanese plums about three-fifty to four dollars per crate. That is, from two seventy-five to three and a quarter, net, for a crate of twelve boxes, such as hold ordinarily about sixty pounds.

MR. HOYT: Where do you sell them?

MR. EATON: The maritime provinces take the most of them. I have shipped some to Montreal, and the returns have been good enough to warrant quite a few shipments there. Of course, one trouble in trying to place a high grade article of this kind on the market has been the inferior stock with which the market has been flooded. There always has been, and I think always will be, a demand for such fruit, carefully selected and packed. I have known of some cases where they have been sold in Montreal as high as five dollars a crate. I have not been able to supply the province of Nova Scotia with as many as they wanted to eat, at very paying prices.

MR. HOYT: Have you had very much trouble on your shipments to England? I understood that you had sent some plums to England.

MR. EATON: I shipped two different lots. The commission men over there would be well satisfied if we could get the plums into the English market at the proper season. If I could put those plums on the English market the first of October, after their English varieties have gone out, I could get splendid prices for them, but I have not done much

toward exporting them to England, for the same reason that I have not shipped many to Montreal. While the first shipment arrived in good condition, I would not want to risk it very often until we get cold storage between Halifax and London.

(Mr. Eaton here showed some views of his orchard planted on the intensive system. See plate III.)

MR. HALE: Do you expect that they will do as well where they are set like those you have in view?

MR. EATON: I believe in heading in all fillers, not only in plum trees, but in apple trees, before they are large enough to interfere. In a good many places in our country there are trees which have interlacing branches, and I think there is no need for this if proper care is taken in pruning. Trees that are interlaced can be brought back into proper shape with the clippers without retarding the usefulness of the trees.

I was asked how old the orchard is. The older portion of the orchard is fourteen years of age. The majority of the trees would average seven or eight years of age. It makes a difference what the variety is as to the amount of heading in necessary. Some varieties require it more than others. The Abundance needs none. The Red June and Burbank must be headed in very severely. The Wagener apple tree needs very little. I know of no apple tree that will bear as much fruit for the space it occupies. In a young orchard which I planted three years ago, of five thousand trees, set $8\frac{1}{4}$ by $16\frac{1}{2}$ feet or 320 per acre, apple and plum mixed, I have been cultivating in this way. My man with a wide cultivator goes down on one side and back on the other. He cultivates those five thousand trees, on twenty acres, at the very small cost of two dollars. I allow him to go over that orchard once a week.

MR. HOYT: How much space do those trees occupy?

MR. EATON: Twenty acres.

MR. HOYT: And how long does it take your man to go over them?

MR. EATON: A day.

MR. HOYT: A horse cultivator goes through it in one day?

MR. EATON: Yes, cultivating from two to three feet on both sides of the trees. In this intensive system of planting there is great economy in the cultivation per individual tree. Such an intensive system is not generally approved, but I am in for fruit and believe I can get much more in this way and with great economy in many respects. If I change my mind in a few years I can transplant the trees with little loss of growth. So far, however, my experience has been corroborated by the work of a few others. I have had the satisfaction of knowing that many of the best fruit men of our valley are adopting, to almost the same extent, the system which I have.

MR. HOYT: How do you cultivate that twenty-acre tract? What is your rule for cultivating, so that you can cover twenty acres in one day? Do you cultivate very close up to the trees?

MR. EATON: The trees are planted as I explained to you. I widen out the cultivator about as far as it will go. The man goes down one side the row and up the other. Clean and perfect cultivation is thus given around the trees and as far as the roots extend.

MR. HUBBARD: So he doesn't cultivate the whole of the land?

MR. EATON: No, not in my young orchard. When the narrow strip in between is not cropped, and I desire to keep down the weeds, an occasional disking is given. For my older orchard, I have harrows that will harrow about eight feet in width, and the same area is cultivated in a day with a pair of heavy horses.

THE PRESIDENT: Have you any of the large growing varieties alternating with the other varieties in that orchard? Any of the large growing varieties like the Gravenstein, mixed in with the Wagener?

MR. EATON: Yes.

Speaking of the cultivation of the orchard, I have about 91 acres in orchards, containing about 30,000 trees, and my man and team has during the last two or three years cultivated that about once a week. A good man and team will cultivate about fifteen or sixteen acres a day without over-working.

MR. HALE: Mr. Eaton, I think a few years ago that you told me that you practised considerable summer pruning, or heading in. Do you do that now? If so, do you prune your permanent trees as closely as you do the fillers?

MR. EATON: I aim to head in about July my large plum trees, all the Burbanks and such fillers of apple as I think require it. My permanent trees I do not prune in summer. My man usually does that work in winter. The King is the only permanent variety I head in.

MR. HOYT: You speak about cultivating the orchards, do you raise any crop on that land, such as clover, or anything of that kind?

MR. EATON: Yes, I raise clover for nitrogen and humus.

MR. HOYT: What do you think about crimson clover?

MR. EATON: I favor it on light land that can be worked early in the spring. It will not live through the winter with us. I prefer the Mammoth on heavy land, for it makes a fine growth in the spring before cultivation.

A MEMBER: Will you tell us, Mr. Eaton, the size of the fruit baskets that you use?

MR. EATON: Six by ten inches and three and a quarter inches deep.

THE PRESIDENT: Mr. Eaton, here is a question in the question box which I guess you had better answer. "Why not raise the Ben Davis apple for profit or pleasure as compared to three-fourths of the list catalogued?"

MR. EATON: I have planted the Ben Davis apple quite largely. If I were to plant another new orchard I might slack up on it. It has many strong friends in our province. Its appearance and keeping qualities make it bring good prices in England.

MR. IVES: What time of year do you mean to transplant large trees?

MR. EATON: I prefer to transplant in the spring. I would be afraid that the amount of moisture absorbed by the roots would not correspond with the evaporation by the frost in winter.

MR. HOYT: About what size are those trees that you are talking about transplanting?

MR. EATON: Some of them have been twelve years old.

MR. IVES: After you cut them back and move them will they bear the next year, or will it take two or three years?

MR. EATON: I think that in large trees the growth is checked quite two years. Of course, in transplanting a tree I would transplant the off bearing year, so that I would lose a very little more than one year's profit.

MR. HOYT: How many trees would five or six men transplant a day, that is, trees six inches in diameter?

MR. EATON: I can hardly give you figures on that. I had two men who dug up trees from three to four inches in diameter, six or seven years of age, and it only cost me about 25 or 30 cents per tree, paying my men at the rate of a dollar a day.

MR. ROBERTSON: This fruit that I have seen from Nova Scotia, it has seemed to me, did not have the proper color. I have seen Gravensteins and some other varieties from Nova Scotia, but the Gravenstein, while it was very fine, did not seem to have any color. It was not firm like ours here. Your Nova Scotia fruit, apples, while they are very nice, yet there is no color to them.

MR. EATON: The Gravenstein on highly cultivated land will not color quite as much as we would like to have it. I do not know whether Mr. Hale has proven to your satisfaction that potash will color fruit every time. Lack of color is often due to too early picking with us.

MR. ROBERTSON: Planting an orchard in the way you have described it seems to me that the trees and branches might be so thick that we would not get a properly colored fruit.

MR. EATON: In my own orchards I have not seen this effect.

MR. HALE: Don't you think that the roots might cross, as well as the branches, unless they are kept down?

MR. EATON: In my orchard which was planted by my Connecticut forefathers the roots must have crossed 125 years ago. That orchard is in healthy bearing condition to-day. I think we need to pay very little attention to where the roots go, provided they get something to eat.

Mr. Eaton's very valuable paper and the practical discussion following the same held the attention and interest of the meeting until the hour for adjournment arrived.

Before adjourning, the following special committees were named by the president:

Committee to examine the exhibits of fruits and award premiums—Mr. T. E. Cross of Poughkeepsie, N. Y., and Mr. S. L. Lupton of Winchester, Va.

Committee on the machinery and implement exhibits—N. S. Platt, New Haven; Prof. L. A. Clinton, Storrs, and Stephen Hoyt of New Canaan.

At 5.15 an adjournment was taken until the evening session.

EVENING SESSION.

The Society came to order for the evening session at 7.30. The attendance was unusually large for such a meeting and the audience included many ladies.

With a reception of visiting delegates, an illustrated lecture and several interesting extra features, this session proved the most enjoyable evening meeting in the history of the Society.

First on the program came addresses by visiting fruit growers from other states, and in introducing this part of the program President Gulley said:

PRESIDENT GULLEY: I might say we have a number of prominent men with us, some of whom you have already heard, and others who have not been on the stage to speak as regular speakers, and we propose to have them come forward where you can see them, and say a few words to us this evening. I will call first for a few words from Mr. T. E. Cross of Poughkeepsie, N. Y.

MR. T. E. CROSS: Mr. President, Ladies and Gentlemen: I am a member of the New York State Fruit Growers' Association, and am very glad to be with you and extend a greeting from that Association to the Connecticut Pomological

Society. Both of these organizations are established for much the same purpose, to upbuild the interests of the fruit growers in their respective states, and I feel very confident they are accomplishing wonderful results. I know the New York state fruit growers are heart and soul with all of your people for the work in hand, and to further evidence that statement they have arranged, in coöperation with your society, to hold a joint meeting in New York city on the 15th and 16th of February, the announcement of which will be made later, and as a member of the New York State Fruit Growers' Association, I hope you will all be there, and have a good time, and derive much profit from the joint meeting.

President Gulley next introduced Mr. E. C. Powell of Springfield, Mass., who spoke as follows:

MR. E. C. POWELL: Mr. President, and Ladies and Gentlemen: I see a good many familiar faces here, although I have not been with you before in two years, but my thoughts were with you last year, even though I could not come, so I thought this year I would take a day off and run down and see you. I brought a pretty good delegation with me. I think there were seven of us from Massachusetts, four peach growers from Wilbraham and one large apple grower, and two poor newspaper men. I am very glad to be with you, and wish I could only stay longer. We have our state fruit meeting at Worcester next March. I think some of your members have been with us before, and I hope to see some of you there again.

President Gulley then called on E. Cyrus Miller of Haydenville, Mass., who spoke as follows:

MR. E. CYRUS MILLER: Mr. President, Ladies and Gentlemen: I assure you that it is a pleasure to be here to-night, and a pleasure to have been here to-day, for the meeting you had this afternoon has been an inspiration to me. I did not realize that this meeting was to be so large, and as enthusiastic as it has proved to be, and I have had an experience which I had not anticipated, ever since I heard through the courtesy of one of your members that you were to have a

meeting to-day and to-morrow. I have always been in the habit of attending our fruit growers' meetings at Worcester, but to-day I thought I would come to your Connecticut meeting, and you have given us a feast of good things. I have had some acquaintance with several of your members, and through the inspiration I have received by talking and corresponding with them, it has been a great benefit and help to me in my pursuance of the apple growing business. The apple is my particular hobby, and the Baldwin is my specialty. This is a day of specialties, and it is not enough to confine one's efforts to apples, but I believe the time must come when we must specialize some *particular apple*. I would take exception to some of the speakers that have spoken to-day, inasmuch as they have spoken of so many varieties they have planted and interplanted in their orchards. I believe it is one of the mistakes of commercial orcharding in planting too many varieties. When I have buyers come to my place, I have one particular apple to show them, and I have an apple of which there is enough and abundance, or over-supply. I can produce them by the carload lot, and sell them by the carload lot. I don't have to stop and sort out the varieties in my orchard, for I can go to the orchard and pick up Baldwins and market them. This matter of convenience to market is a great element in fruit growing. We are within a stone's throw of a railroad, and as I heard the gentleman from Virginia speaking to-day, I didn't know what I should do if I was located where I had to draw my apples four or five miles to the railroad station. Frequently we have loaded a carload of apples from our storehouse in from three to four hours, so you see it is a great element of saving and expense to be near your shipping station. I was speaking with a gentleman to-night at the hotel on the subject of pruning apple trees, and I told him that as I pruned my apple trees I always have the ideal in mind, that is, to prune a tree so as to have a harmonious tree, to produce a tree from which the fruit can be picked economically, and on which the fruit can grow to the most perfection. We think there is one great mistake that orchardlists make, and that is in not paying more attention to the shaping and forming of the tree. If I were asked to

write an article for a paper, I should choose the subject of "the ideal fruit tree," and in that article I should try to give my ideas of what I consider the ideal tree, such as making it harmonious to the eye, and having it open in the center to allow the sunshine and air to come in, and so color the fruit and make it handsome to the eye. I thank you most courteously for calling on me, and if ever you come to Hampshire county, Mass., I invite you one and all to come to our fruit plantation, for every portion of the year there is something of interest there.

President Gulley next introduced Prof. Close of Delaware, who spoke as follows:

PROF. C. P. CLOSE: Mr. President and members of the Connecticut Pomological Society, and Ladies and Gentlemen: This is a great surprise to me this evening. I have been saving my powder to burn to-morrow, and I wanted to tell you then how glad I am to be with you, and save everything up for one talk. But I certainly am pleased to have the opportunity to rub up against these practical men, and all the men that I have met and shall meet before I leave. I hope to be able to help you solve some of your difficulties in fighting some of the insect pests. One of the specially good features to me in attending this meeting is the meeting again of some of my own college friends; your worthy president was one of my college teachers, and it is always a pleasure for me to meet him. I think this is all I have to say this evening, and I thank you very heartily for this opportunity.

President Gulley called on Mr. S. L. Lupton of Virginia, who was applauded as he rose to speak.

S. L. LUPTON: Mr. President, members of the Connecticut State Pomological Society, Ladies and Gentlemen: It seems to me I have spoken quite enough for Virginia, but inasmuch as I came to this section about fifteen years ago, somewhere north of here, to get me a wife, of course I am more than half Yankee now, and possibly when I leave this time I will be entirely converted. There are some things in Virginia we are always very proud of, and one is the old Virginia hospitality. I think, when I go back, I shall have to say I have

enjoyed some of Connecticut's hospitality, which is quite equal to any we have south of Mason and Dixon's line. From remarks made by Mr. Cross, referring to an additional appropriation for your Society, reminds me of something I once heard, and that was the definition of an expert. Professor Wall made use of the term expert before a committee at Washington once, and he was asked by the chairman of the committee to define what an expert was, and he said, "an expert is the last man to find out the facts." He was then asked what an *agricultural expert* was; his reply was, "an agricultural expert was a man that made two dollars grow on an appropriation bill where one did before." I give you that fact for the benefit of your legislative committee; I think probably it will help them some, if they will turn themselves into agricultural experts, and make two dollars grow where one did before. Thanking you for the opportunity of saying a word for Virginia, and hoping we may meet you sometime in the historic valley where I live, I shall, like my friend here, wait until to-morrow to give you some facts on the question of organization among fruit growers.

Mr. A. G. Sharp of Richmond, Mass., spoke next, as follows:—

MR A. G. STARR: Mr. President, Ladies and Gentlemen: I can certainly say I am very happy to be with you here this evening. As most of you know, I have had the honor of reading a paper before this Society at three different times, and I think that is honor enough for one man from Massachusetts. I was a little late in getting here to-day, but still in time to hear Mr. Cross of New York state, and, by the way, I am somewhat of a "cross" myself, perhaps you might call it a Sharp-Cross between New York state and Connecticut. My father was a New York state man, brought up on the Hudson river, while my mother was a Griffin, and my forefathers on that side owned one of the largest houses in Connecticut, the old stone house in Guilford, so that I am interested both in New York state and Connecticut, though I am residing about half way between, in the Berkshire hills, a very pleasant place, and I would be happy to see any and all of you there at some

time, and I hope I may see some of you at our Worcester meeting next month. I thank you for this honor.

President Gulley next introduced Mr. Ralph S. Eaton of Kentville, Nova Scotia, who responded briefly.

MR. RALPH S. EATON: Mr. President, ladies and gentlemen: You gave me so much time this afternoon that I think I should be excused now. However, coming from Nova Scotia, I feel glad to exchange greetings with you. I think perhaps this is the first time a Nova Scotian has had an opportunity of joining in any of the Pomological Society meetings that have been held in the United States. I must congratulate this association on the splendid attendance which I have seen this afternoon. I hope they are all members, or, if not, will become members, because I know what the secretary and treasurer have to contend with usually in connection with these societies, and the support of all, no matter whether they are fruit growers or not, is always very acceptable indeed. I was immensely surprised this afternoon at the array of professional men before me, and after I got through hurriedly with the written notes that I had, I felt fearfully embarrassed about going on. I have seldom ever met at any fruit meeting so many professional men. I was at the Syracuse meeting, taking in for an hour or two quietly what was going on there at their association, but neither in general attendance of the meeting, nor in the array of scientific men, did it approach the splendid showing you have here to-day. We in Nova Scotia feel it is not wise to have all our eggs in one basket, and we wouldn't think at all of going in for one variety of apples alone. For very many reasons. We like them to come in succession, so that we can have at least two months to harvest them in. If our apples were all Baldwin or all Ben Davis, we would have to hustle very lively to get them all in in the last week in October. Eight weeks' fruit season makes us work about as fast as we want to. It seems to me that you people in Connecticut have a very great advantage over us in Nova Scotia, as I understand all your crop is practically consumed in this state. It only has to travel a few miles by railway, and the cities in fact import more fruit than is grown in the state.

All the apples we sell in Nova Scotia have to go two thousand miles after leaving our town port, and that at an expense of seventy-five cents a barrel; in other words, before we can get a cent on our apples, we usually have to pay \$1.40 in expenses. It seems to me in no place that I have been is the prospect for growing apples so good as it is here in Connecticut, and if there are many or any young men in the audience, I would like to remind them of a remark that I heard to-night at dinner, that most men in the United States wait until they get to be forty-five years of age before they begin to plant an orchard. Now it is not too late to plant them then, but I want to tell you to get at it when you are young men, and if you have not money enough to buy a hundred or five hundred or a thousand trees, buy the root grafts and take care of them, and in a few years you can usually transplant them so that you wouldn't know they had been moved, and you can have an orchard of some size in a few years at very little expense, just the expense of a few root grafts and the labor of converting the woodland into fruit land. When you have done this, you will find that it is not as expensive as you might anticipate; very often such woodland will have as much wood on it as to pay to cut it into shape. But you need not clear up the whole woodland in order to plant your trees, if you are only going to plant them 40 or 50 or 80 trees to the acre. You can get them planted among the stumps, and if you don't want to plant them that way, you can plant them more thickly by taking out a line of stumps, and get them under way and get them ready for bearing, so when you are in middle life you will have a splendid large income from your orchard, and you won't have to wait for trees to grow and bear fruit in your old age. I thank you for your kindness in asking me again to say a few words, and it is a pleasure to be here and observe the splendid Society you have got in this small state.

At this point a feature not scheduled on the program was introduced.

Miss Florence Scarlett McCall, an elocutionist, of Hartford, gave an original sketch entitled, "Eve's Reception," which included a very clever adaptation of the names of all the fruits.

The audience was much pleased and Miss McCall very kindly responded to an encore.

The first address of the evening was by Mr. Ethelbert Bliss of Wilbraham, Mass., whose subject was "Experiences in peach orcharding at Mapleside Farm." Mr. Bliss' remarks were illustrated with many lantern slides showing the various phases of his successful orchard undertakings.

[As it is impossible to reproduce here the pictures shown in connection with this address and without which it would be of little value, we are compelled to omit this feature of the program entirely.—EDITOR.]

Mr. H. W. Collingwood of the *Rural New-Yorker* was introduced next and gave the principle address of the evening, as follows:

The Trend of Present-Day Fruit Growing.

By H. W. COLLINGWOOD, Editor *The Rural New-Yorker*.

I am not a prophet, a son of a prophet, or a fortune teller. It does not need a prophet, however, to see that wonderful changes are working out and that the changes of the future are to be even greater and more rapid than those of the past. Those of us who are able to go back 25 years or more remember what was done then in the way of fruit. On my uncle's old farm over in Massachusetts there were possibly a dozen apple trees; Porter and Baldwins were the chief varieties. These trees, poorly cared for and not fertilized, butchered, rather than trimmed, added a fair sum to the income of the farm, and, what is more, laid the foundation for the feeling which has developed into the Apple Consumers' League. These apples were sold within a limited range of possibly 10 miles. Few, if any, rotted or were lost. Those which could not be sold were generally cut up by hand, dried in the sun, and either sold or eaten as dried apples. I regret to say that even the parings were soaked or boiled in water, squeezed through a bag, and sold as cider or weak vinegar. It certainly

was very weak. From these humble beginnings have grown our present immense trade in fruit. I am optimistic and believe that the future has even greater development than we have known during the past. Comparatively few apples at that time were shipped into Boston market by rail. Now they come from practically all over the world. An Austrian farmer told me, two years ago, that he fully expected to ship apples of a certain variety to this country and find a profitable market for them.

As an illustration of how the market has developed, I will say that 20 years ago I passed through the city of Savannah. I hunted everywhere to try and find an apple to eat, but I was unable to do so. There were bananas and oranges, but no apples. A little over a month ago, I went through the same city of Savannah. At every fruit store, and on every fruit stand, there were as many apples as oranges offered for sale. In the daily papers of Savannah, large advertisements announced the arrival of a shipment of Northern apples. So far as I could see, the apples were eaten by the common people in that Southern city as freely as oranges were. One Italian had apples, oranges and bananas on his stand to represent the American flag. It seemed to me there was a most hopeful sign, both in development of the apple trade and in the development of that patriotic expression in an Italian.

Going down through Florida, I travelled with a party of Cubans on their way to Havana. It came time for eating their lunch, and they pulled out a large basket of food. To my surprise they had, in connection with sandwiches and cake, a dozen fine Baldwin apples. They prefer them to oranges. They had rarely eaten any before in their home in Cuba, but expected to continue to eat this fruit. Now let us think what this development means; spreading of the value of the apple all over the South and into Cuba. You may take that as an indication of what advance has already been made, and what you may expect in the future. What kind of an apple do people want? Where are these apples to be grown? How are they to be sold and distributed, and who is to benefit from their sale? It is simply a question of bringing out the undeveloped possibilities of markets, varieties, and sections. To

make a homely illustration, the development of the apple business in New England would be not unlike the development in my old horse. A milk man in New York had an old mare named Kate. She was stiff in her knees and limber with her heels. She had been pounded and abused for nobody knows how many years. Still, she had been a faithful servant for the milk man. He asked me if I would take the old mare to the farm and keep her comfortable until she died. If I did not do this, he said, he would shoot her, as she was no longer serviceable to him. I thought I saw some undiscovered possibilities in old Kate, so we took her to the farm and she jogged about doing her duty for two years. At the end of that time, I thought her work was done. For me, there were no more undiscovered possibilities in the old mare. My neighbor is a hen man. When he found that I was going to put the old mare out of the way, he said he would like to take her and feed the meat to his hens. I knew he would end her days gently, and so he took her. To my surprise, a month later, I found the old horse still living. Uncle George had discovered possibilities in the old mare. He had her at one end of the hen-house, and assured me that she kept that house warmer than a big stove could ever do. When the hens got cold feet, they roosted on old Kate's back. The women folks drive her, she is well cared for, and is good for several years more of service. No doubt, when Uncle George gets done with her, somebody else will discover new possibilities in the old mare, and so it goes.

The Apple: Men and sections have been given up and abandoned because it was thought that their possibilities were exhausted. Others, with a more hopeful view of things, or with a clearer and broader vision of life, came to these markets, or men, or sections, and like Uncle George and the old mare, discovered latent powers in that which should not be thrown away. First, let us talk about fruit. I discuss the apple, because it is the standard product of New England. You may say what you will about other products of the soil, in New England States, but the Baldwin apple is the one thing most worthy among them. In my judgment, we are to learn more and more the science of growing varieties that are suited

to the locality. We now have too many misfits in our apple orchards. Northern Spy grows where Baldwins would thrive better. In our haste and hurry to get rid of our old friends, Greening and Russet, we are growing some red varieties which are out of place and which, in time, must go to the wood pile. The experiments will pass in time and varieties will adjust themselves to localities, just as Holstein cattle always congregate in a section where alfalfa thrives. We shall also learn more and more about the influence of stock upon varieties. We shall learn what makes the best root, and what to use for the foundation of our orchards. Such varieties as Greening and Russet have been going out of style during the last few years: the rage has been for a red apple, and this has given our old friend Ben Davis the opportunity of his life. I believe that Greening and Russet will come back again in moderate way, as people grow more to recognize varieties. My judgment is that there is also likely to be an increased demand for a smaller apple. The large fruit makes a handsome showing but the firm high colored fruit of medium size is to be the apple for the million, and the profits of the future will come from supplying the million mouths, rather than the 500. We must have an apple that a man can carry in his pocket, without being ashamed of the bunch it makes there.

Soil and Locations: I expect to see, during the next 20 years, a rapid adjustment of the apple growing areas. To me it seems clear that the tendency will be to go back to the rougher hill lands for our apple orchards. The richer level lands will, in my opinion, be demanded for other food or fibre crops. They will go higher and higher in price, and as the towns and cities spread out, these valley lands will be required for gardening. They will be too expensive for the planting of apple orchards in competition with the cheaper hilly lands. For example, I expect to see the great orchards in Western New York largely leave that section for the more hilly ground. This will be not only because of the increased price of the land, but because continued apple growing in any section, for a long period, will introduce conditions such as insects and fungous diseases and soil needs which will make that section unprofitable for fruit growing. Our best fruit is to be

grown on the cleaner hill lands. This may seem a ridiculous view at present, but when some of these hill orchards now growing come into bearing, the flavor of the fruit will be so remarkable that it will take the lead in the market. Land 400 miles from the seaboard, and worth \$150.00 an acre, will not forever compete with land 100 miles away that cost \$30.00 or less. In the end I believe that the cheaper barrel of handsome apples put in New York will win, and I believe that on the New England hills and along the ridges south can be grown the cheapest barrel of fruit. I feel very sure that the rough hill lands on the Atlantic coast are to be the great apple orchards to supply the Eastern States and Europe. Apple culture will climb up hill in order to secure cheap land, less danger from frost, and cleaner sunshine and air. During the next 10 years I expect to see great attention paid to experiments in planting trees on rough land. There are many things in this connection which are interesting. For example, on my own farm, I am trying to work out a plan, which may be practical. The farm stands on edge, with an abrupt slope on either side. My plan is to get to the highest point on this ridge and drill a six inch well down through the rock till I strike a living stream of water. We generally do this at about 125 feet, so that the water rises to less than 40 feet of the surface. When this is done, I intend to put down a powerful pump and, by means of a gasoline engine, to pump a constant stream through the months of May, June, July and August, and let it trickle down on either side of the ridge slowly, under the mulch which covers the ground. This plan I believe to be thoroughly practical, and if the ground is covered with mulch there will be little need of washing the soil and both the grass and the trees can be provided with an abundant supply of water. I succeeded in starting alfalfa on this ridge, and, with this plan of irrigation, I see no reason why both the alfalfa and trees should not thrive, the one practically feeding the other. There are plenty of places in New England where such a plan as this could be tried. If we can make it succeed, we shall have an advantage over every section of country that I can think of, for it is compar-

atively easy to irrigate down hill where the ground is covered with a mulch.

Care of the Tree: It seems to me that the questions of cultivation or mulching will settle themselves. We shall probably find that those who advocate thorough culture on the level lands were right, but that rough land culture demands another method. We have seen so many things grow and develop that it seems absurd to say that any principle is definitely settled. When I was a boy we gnawed the fruit around the worm-hole in an apple, because there was nothing else to do. We simply accepted that worm-hole as one of the necessities of life. Now we have sprayed until it is next to a disgrace to sell a wormy apple. How many of you men have stopped to think that 25 years ago spraying was practically unheard of. A few people were spraying with Paris-green and water, to kill the codling worm, with crude pumps and nozzles and an indifferent success. Now, spraying is done by powerful machinery, and who will say that the development of the next 20 years will not startle us, who at that time will be sitting down outside to watch the battle of life. The shape of the tree is also changing. The old high headed orchards are all out of date. The other extreme has come, and it is a fair question to ask, why a tree should ever have any stem at all? A low headed tree is easier to spray, easier to pick, easier to prune, and less inclined to be swung about by the wind. In some sections, however, I find people who argue against the low headed tree. In Delaware, for instance, I found some men who object to it, because the lower limbs hug the ground, and thus prevent circulation of air, so that the lower fruit may rot or refuse to color. This objection is urged in a flat, level country, where the air drainage is poor; it will not follow on a hillside, where I believe most of the future fruit of this country is to be grown.

Markets: Where are the apples of the future to be sold? That question confronts many a man who is tempted to plant an apple orchard. The same thing was said 20 years ago to my knowledge, and I have no doubt that there are men here who can look back 60 years ago and tell us the

same thing. In my judgment, we have scarcely begun to eat apples freely in this country. In the city of New York alone, there are two and a quarter million people both of whose parents were born on the other side of the water, and a large proportion of these people were not fruit eaters, except in a very small way. They are now beginning to buy fruit, and every one who begins to eat fruit in this country ends by selecting the apple as his favorite. Even down on the East side of New York, in the sweat shops, where people toil all through the day and far into the night, at their sewing machines you will find many a woman bent nearly double over the machine with a part of an apple by their side. The fruit which in former years was dumped into the river or thrown away, is now bought up by Jewish peddlers and sold to this class of people. This is a clear gain, not because the grower gets anything for this fruit, but because of the educational side of it. These people will not be satisfied all their lives to eat a rotten apple, or to gnaw around a worm-hole, or to eat the hole, as many of them do. They will demand more and better fruit as the years go on, and we shall live to see a half million Jewish people, now in the city of New York, among our best customers for good apples.

I once saw an Italian prisoner taken out of a Police Court and put into the Black Maria to be taken to Blackwell's Island. He was chained to a string of men, and, as they piled him into the wagon, his wife ran up with something held under her apron. He reached out his hand for it, and I found it to be a banana and two Baldwin apples; so you will see there is hope for the apple market, when an Italian woman sends a Baldwin apple to prison with her husband, in the hope of reforming him. But it is not to the large markets alone that we will look to in the future. The local markets have been neglected. There is a chance for developing the smallest towns, or even in the country, if growers will only look about for them and develop them. In fact, it is in these local markets that the smaller growers may look for their best sales. Many of us have been in too much of a hurry to rush our fruit over to the wholesale dealers in the city, neglecting our neighbors and others, who, if they were

urged to do so, would in time become good customers. All these things must be considered in the future.

Another thing which I believe we are working to is better grading and classifying of our fruit. It is positively foolish in these days to send anything but first-class fruit to market; especially from a small farm. The package, the freight and the handling cost as much on the poor fruit as on the good. We are going to discover in the future new ways of utilizing our seconds and culled fruit. I find a demand everywhere for a guaranteed article of cider vinegar. I believe that someone has an opportunity here for putting first-class vinegar in neat, small packages on the market under a brand and seal. For years efforts have been made to secure a Pure Food bill at Washington. We have not succeeded in getting it yet, but we have succeeded in educating the consumers so that they will demand pure goods. We are to take advantage of these things by dealing directly between producer and consumer. In my own case, we have succeeded in getting as much for our windfalls and culled apples by feeding them to hogs as we ever did in trying to ship them, or make them into evaporated fruit. These things are to come in the future with the discovery of new methods of utilizing food and new demands for waste products. Education on this line is constantly going on, almost unconsciously it is true, but still making progress. When I started to talk about the so-called Apple Consumers' League, I was laughed at. Even when I approached some of the shrewdest and best advertisers in the country, they failed to see anything in it, and were not inclined to help it along. Now within six years the idea has grown so that there is a demand for an annual national celebration of "Apple Day." Several societies have already passed resolutions calling for such a day and giving good reasons for it. I merely speak of this to show what can be done to promote business by earnest and constant talk.

Years ago, it was impossible to find a baked apple in the majority of city hotels or restaurants. Now they may be found everywhere, and we are trying to induce bakers and food stores in large cities to sell baked apples by the dozen, as they do pies and cakes, or bread. If this can be done, the

market in apples would be wonderfully promoted, and it will be done, just as soon as the demand is strong enough to force it. There are few businesses in the country which have the power not only to supply the market, but to dictate what that market shall sell. The apple growers have this strange power in a marked degree.

I have spoken about the possibilities of our local market, but we must not forget those of the foreign market. Few of us realize how the foreign trade in fruits has developed. Last year we sent abroad \$19,839,107.00 worth of fruits. Of this, \$8,058,908 represented apples, green and dried. This is more than five times the value of the fruit exports of 15 years ago. To show how fruit ranks with other exports, I can give, at random, a few figures of other articles. The total value of all the corn exported in one year, up to December 1st, was only \$25,257,143.00. The total value of all the wheat was but \$10,821,350.00, or only one-half the value of the fruits. It will startle some of our farmers to realize that the export value of apples alone was nearly equal to the total export value of wheat. The total export value of all the anthracite coal for one year was only \$11,077,470.00. The total value of manufactured cotton for 1903 was \$19,733,070, practically the same as the export value of fruit. The papers are full of articles showing the great necessity of increasing our exports of cotton. Without a word of comment, the exports of fruit are increasing until they surpass those of cotton goods. The total exports of builders' hardware, saws and tools were \$11,176,613.00. The total exports of boots and shoes were \$17,319,775.00. Yet what a noise has been made about increasing our foreign trade in these goods. The paper trade feels, with justice, that it has been restricted; yet its foreign trade is but \$7,883,686.00, or less than the foreign trade in apples.

Here, at random, are a few figures showing exports of familiar goods:

Hams	\$20,560,889.00
Bacon	24,865,126.00
Butter	2,184,082.00
Cheese	1,928,639.00
Tobacco (Mfd.)	5,325,903.00

I might give other figures to show how the export trade in fruit compares with that of other articles, but I have demonstrated that it is no longer to be classed among the infants, but stands squarely among the best.

I point out, that with all these other articles, such as corn, cotton and wheat, we have reached nearly our limit in export trade. The growing demands of our own country will absorb more and more of these products and leave less of them for export. Not so with fruit, and especially apples. We have practically the monopoly here in New England in the production of the finest class of Baldwins and McIntosh Red there is. I look, therefore, to see the day when apples will stand at the head in value of all our list of exports to foreign countries.

Now, as to packages, we are in the experiment stage. I do not know exactly what the best package is. For my own trade, I find the bushel box with yielding sides, closely packed, the best package for the middle class trade. The barrel is the package for the wholesale trade, but I believe we are to get closer and closer in our relations between producer and consumer. When this is done, you must come to a smaller package. I think the time is already here, when a few apples can be sold in a heavy pasteboard box, nicely packed, wrapped tastefully in paper, and shipped rapidly to the consumer. The parcels post, which we are sure to have some day, will make a great difference in the handling of our fruit and vegetables. It has already done so for France, where the parcels post is a success. In that country the Government has control of all the public utilities, such as the railroad, the post, the telegraph, and the telephone system. The railroads belong really to private corporations, but they are under the control of the State, which grants them concessions and guarantees the payment of the interest on their investment. Thus the common people who own shares in the railroad are guaranteed a fair investment from year to year, and, in return for this, the Government regulates rates in the interest of the people. Under this system, it has been comparatively easy for the Government to carry out a parcels post. Anywhere

within the limits of France, packages up to 6½ lbs. are carried for 12 cents; up to 11 lbs. 16 cents; up to 22 lbs. 25 cents. For five cents extra, the parcels are delivered at the residence of the man who orders them, this principle being much the same as our ten cent special delivery system. Under this system, the country people in France are shipping hundreds of thousands of packages of butter, poultry, fruit, vegetables, and even eggs, by mail. When we come to think of shipping a dozen eggs by mail, we get down pretty close to the very limit of business. The result of this has been that the country people are able to deal direct with the consumers. They dispose of immense quantities of first-class products in this way, sending it direct to the city, avoiding the extortionate charges of the express companies, and also the profits of the middle men. If those merchants and others who opposed the parcels post were as wise as they ought to be, they would see two things. First, that their opposition is sure to be swept away, just as soon as people realize the benefits from this parcels post. Second, that the more they oppose it, and the more they stand up against it, the more their business is going to be hurt when it does come, because people will be well satisfied with part of the system to begin with, and give all a chance to adjust their business; whereas, if this opposition is kept up, the people will demand more and more, and, in the end, they will get it. This system of parcels post is, in my judgment, of great benefit to the apple grower in New England. It will give the little man a chance against the big man. I don't believe in the theory that the big folks are to gobble up the little ones and live on them. The whole spirit of the future is the fact that the little man in the future will take his chance in the market, not by his size as compared with his competitors, but rather by his skill and ability to put up a first-class article of fruit.

Mr. Collingwood's splendid address held the close attention of everyone present, and at its conclusion the speaker was accorded hearty applause. Always a favorite speaker

with Connecticut audiences, the genial and talented editor of the *Rural New-Yorker* added many new admirers by his contribution to the program of this meeting.

COMMITTEE ON NOMINATIONS.

MR. ROOT: Mr. President, it has been customary on the first day of our meeting to appoint a nominating committee, and I would like to make a motion that the chair appoint a committee on nominations to submit a list of officers to be voted for at to-morrow's election.

This motion was seconded, and on being put to vote, was carried unanimously.

PRESIDENT GULLEY: I will name on that Committee Mr. L. C. Root, N. S. Platt, Stancliff Hale, Wm. E. Wallace and Harvey Jewell.

Now, as we have completed the program for this evening, if there is no further business, the meeting stands adjourned until to-morrow morning at 9.30.

Second Day, Thursday, February 2.

MORNING SESSION.

The members gathered early for the work of the second day of the meeting. The exhibition hall down stairs was the center of attraction and interest, until President Gulley called the meeting to order at 9.45 a. m.

The hall rapidly filled, indicating another record-breaking attendance.

THE PRESIDENT: I think it will be interesting, before we proceed to the regular program for this morning, to discuss some of the special questions on the program list.

It is suggested that we take up No. 4—

"If we box apples, what classes shall we make and what size box shall be used?"

Mr. G. W. Staples said: Use the bushel box for marketing apples. Here in Hartford a box 18x15x8 in. is commonly used. The Boston box measures 18x18x8. Three boxes equal a barrel.

Mr. Hale thought those named were a local style of box, and not of the standard size; better use the standard Oregon apple box, which is 18 in. long, 11½ wide and 10½ deep.

At this point two boxes of apples from the exhibition hall were brought in and displayed on the stage. These were of the Oregon type and both boxes and fruit were "standard" in every detail.

Mr. Hale further pointed out that for extra size fruit the Western growers use a box 20 in. long, 11 wide and 10 deep. This holds 96 apples, which are packed with all the care and attractiveness that oranges are.

President Gulley said that two sizes of boxes are needed to accommodate the various sizes of fruit to be packed, and great care should be used in grading to exact size.

Mr. Cross confirmed this statement, saying that he had used two sizes of boxes in packing his choicest fruit and found these packages satisfactory for all sizes of apples.

President Gulley referred to the proper construction of the box and that the sides should be elastic enough to allow of some spring after the fruit is packed.

MR. HALE: Mr. President, I think the matter which you refer to, of the spring of the boxes being an advantage, is one in which there are a good many disadvantages. Where you have a package that is absolutely rigid, you have got to use thicker material, and that increases the cost. The only reason that they are made so light is because the timber is a big item of expense, and every sixteenth of an inch that they can shave off the side, making it thinner, gives you so much reduction in price. The big element in the cost is not the manufacture of the box, but it's the timber. In making up the cost, with the modern machinery that we have nowadays, they can rip up the lumber and slash it up into form with wonderful rapidity and accuracy. It's not that that costs. The question of cost comes in in the lumber. If you don't want to pay for anything but a spring box, and want to save on the lumber, you can get it, of course, but it will always be a better package, and carry your fruit better, if the lumber is just a little thicker.

THE PRESIDENT: As to that matter of cost, I was getting some boxes this summer, and they were willing to send me the boxes all made up, but they would not send me the flats. We have to haul the boxes that we buy for use up to the college, about three miles from the railroad station, and it is a good deal more convenient to carry the flats. They were not willing to let me have them in the flat a bit cheaper.

MR. WELLS: Mr. President, I want to add one more word to this discussion on the box question. I think it is absolutely necessary, in shipping away our fruit, to have two sides of the box so it will not spring to any amount. I think they should be made of fairly rigid material. The other two ends can be made of thinner material, so that they can give and take, but the boxes should be so made that the pressure will not all come on the top. The box makers that I deal with make a box that has a little thin strip nailed on the end, so as to prevent it from rubbing against the fruit. Two sides of the box cer-

tainly should be pretty nearly rigid, but the other two can give some, so that the box will be somewhat adjustable.

THE PRESIDENT: I think we shall have to close this discussion on the box question now and take up the next one that is called for.

No. 10: "Is there any use attempting to grow cherries for market in this State?"

THE PRESIDENT: Are there any cherry men in the hall? Particularly, is there a man in the hall who has grown any sweet cherries, or even planted them, and made a success of them in the last ten or fifteen years, or who has attempted to grow any for market? I may say that I have been utterly unable to find a man who has planted any cherries for market in this State at all. This cherry question is one which comes to us very often over at the college. People want to know what is being done about cherries; what cherries to plant in the State. And that is about the only answer I can give them. I have not seen any planted, and I do not know of an orchard, and know of no young trees that have been brought forward successfully. I hear of some old ones occasionally. I presume there are some growers, but, on the whole, cherries have not done very well in Connecticut, and especially sweet cherries. In our trial orchard at the college we have got a number of varieties, but the most of them that have done anything have been sour cherries. I think, with the single exception of the Windsor, there is not one of them that has given us any fruit. Sour cherries have grown quite readily, and do reasonably well.

MR. CROSS: I believe it is utterly no use for anyone in this country to try to grow cherries until the statute laws are changed to some extent, so that we can protect our property from the birds. The robins come in and get them before we can get out in the morning, and they are at it until after we go to bed at night. That is the complaint all over the Hudson valley. The laws are so stringent that we can not kill the birds, and the people, rather than take a chance, as a general thing, are letting the fruit go. I don't think that is quite right. The robins are increasing at an alarming rate all through our section, and they are the most damaging thing

that we have to contend with, especially in trying to protect such small fruits as cherries. They are particularly fond of them, and at the rate that they are increasing it will not be long before we shall have to fight if we obtain any cherries at all.

MR. LUPTON: Mr. President, I think probably the reason that you can not grow sweet cherries in Connecticut is, in the main, that they are grafted on old stock, and it is not strong enough to stand your winters. I think if you would graft your cherries on trees of native stock, which grow well in this northern climate, you would not have so much trouble. That has been our experience in Virginia. We do not have any difficulty that way. You know that a cherry tree is hard to make live and to transplant. I am inclined to think if your nurserymen would try to graft on some of your native stock that they could develop a somewhat hardy variety, which would stand your climate.

So far as the birds are concerned, I think probably we have as many as you do, but we never think about the birds. Down in our country cherries grow wild, on wild trees, and as I told you yesterday, there are so many of them we do not miss what the birds take at all. If you planted cherries, and had large cherry orchards, I do not believe you would miss what the birds take. But, of course, up in this colder climate, where the cherry is a rarer fruit, you do miss what they take. What the birds take does not scare me at all. The principal difficulty in growing cherries with us is the early spring frosts. I take it that you would not have that difficulty. You are not so liable to have those early spring frosts, and I believe you can grow cherries in this climate if you can get your nurserymen to graft on new stock, as I have suggested. I am quite sure of it.

MR. HALE: Ten years ago I planted a few trees, and for the last seven years I have been getting good crops of sour cherries, but no sweet ones. The sour cherry bears well with me, and bears very steadily every year.

THE PRESIDENT: That has practically been our experience. There are numbers of old trees that are bearing, but there are no young orchards. I think if Mr. Lupton's sug-

gestion was carried out it would result in improving the stock.

A MEMBER: I was talking with a cherry man awhile ago, and he tried to make me think that the reason cherries could not be raised in Connecticut was because the orchards were not large enough so that there would be enough for the birds and enough for ourselves too.

MR. HALE: The trouble in Connecticut is not entirely on account of the birds. The trouble is you can not make the tree live in Connecticut. I mean the sweet cherry tree. I think it is probably on account of the stock. When I went into my present home eight or nine years ago, there were a few cherry trees there. I wanted some cherries for my family and so I planted about a dozen trees, and I have been planting ever since, but I presume among all that I have planted since I have not got more than two or three good ones now. I have one good tree that I know of, and two or three more that are doubtful. That satisfied me that the trouble in Connecticut is in the stock, for I took care to get as good trees as I could to plant, and took care of them as well as I knew how. I will bet that I have planted fifty, and I have only got one good tree. I think the trouble is with the stock.

The San José Scale Problem.

PRESIDENT GULLEY: We will now take up the regular scheduled program of the morning. As you know, the leading topic for this morning's session is "The San José scale Problem," one of the most important problems now confronting the growers of Connecticut. The first speaker on this subject is Dr. E. P. Felt, the State Entomologist of New York, whom I now have the pleasure of introducing to you.

DR. FELT: Mr. President, and ladies and gentlemen, it gives me very great pleasure to appear before you this morning, and I hope that you are not expecting too much that is new, because unfortunately we can not always turn out a host of new facts. You have here in Connecticut a very ca-

pable State Entomologist, who has been working along very similar lines, and what I shall say will be very largely in confirmation of his work, and we must remember that in the long run it is the confirmation and making certain of the work of each other which enables us to come out from under the cloud of doubt into the clear sunlight of conviction.

Experience in Controlling the San José Scale in New York State.

BY DR. E. P. FELT, Albany, N. Y.

Just about ten years ago, two bulletins upon the San José scale were published by New York State. One emanated from the Agricultural Experiment Station at Geneva, the other from the office of the State Entomologist. Both were largely compiled and are of interest mainly because of the light they throw upon the situation at that time. These publications supplied a demand for information arising from the scale having become well established in several localities. It is interesting to note that both authors advocate the employment of a whale oil soap solution, 2 lbs. to the gallon, as the only method, aside from fumigation, of satisfactorily controlling this pest in the East. It is true other insecticides were discussed, but the unsuccessful results obtained in Maryland the year before, by the then Division of Entomology, U. S. Department of Agriculture, raised serious doubts as to the value of lime-sulphur salt washes in this section of the country. An infestation at Cornell University was discovered, and in 1897 some experiments with whale oil soap and kerosene emulsion were conducted by Mr. H. P. Gould. These resulted in confirming the value of a whale oil soap solution, 2 lbs. to a gallon, and as a summer application a 25 per. cent. kerosene emulsion was found to be very effective. These experiments were continued along similar lines the following year.

The results with crude petroleum, obtained by Dr. Smith in 1899, were published that fall and in 1900 the speaker began a series of experiments in a favorably located orchard near Albany, the materials employed being kerosene and crude petroleum, both pure and variously diluted, and whale oil soap

in various strengths and also in combination with crude petroleum. A number of tests with hydrocyanic acid gas were also made. Experiments were conducted the same year by Professor Lowe, with various strengths of kerosene oil. Experiments along similar lines were continued the following year, and in 1902 both of the above named parties began a series of tests with lime-sulphur washes, which have been continued till the present time.

The above summary has been given for the purpose of explaining the development of this work in the northeastern United States. Previous to 1895 there had been practically no need of winter washes of one kind or another, and as a consequence eastern entomologists were unfamiliar with these materials and could hardly be blamed for accepting as conclusive the eastern experiments mentioned above, which were conducted by parties more or less familiar with the behavior of these materials in the West.

Whale oil soap solutions are undoubtedly effective when thoroughly applied, though they are too expensive for general use in orchards, and as a consequence a cheaper material had to be found, even though careful men were able to obtain very satisfactory results when only a pound and a quarter of soap was used to a gallon.

Fumigation with hydrocyanic acid gas was at this time the only other treatment known to be efficacious in destroying the scale. A great many experiments were tried for the purpose of demonstrating its value in this climate, and considerable time and thought given to devising a practical apparatus for use upon moderate sized or even larger trees. The great cost of enclosing large trees with a gas-tight structure has prevented the general adoption of this method by orchardists and restricted its employment to the nurserymen. This method of treatment is undoubtedly our best safe-guard against the further dissemination of this pest, and even then the fumigation must be very thorough or insects may escape the deadly fumes. Generally speaking, we prefer to recommend this measure as a means of insuring safety rather than to indorse its employment in the freeing of nursery stock from scale known to be present. In this connection it may be well to allude very briefly to our system of nursery inspection, which

has undoubtedly been most valuable in restricting the spread of pests in New York State. This work, as it is well known, is under the control of the Department of Agriculture and it is so arranged that each inspector is responsible for a certain section which he is required to inspect prior to the shipping season. At this latter time he is mostly occupied in looking over shipments which come in from outside of the State. The inspectors are continued from year to year and after a time become familiar with their districts and so expert that they have little difficulty in finding the pest even when present in very small numbers. The result is that our nurseries are exceptionally clean, and as a consequence the danger of the insect becoming established in other localities is reduced to a minimum. Our law provides that the Commissioner of Agriculture must be notified of the shipment of every lot of nursery stock entering the State, and as a consequence the inspectors are enabled to keep a close watch upon everything coming in from the outside.

Previous experience with kerosene emulsions in particular led to a great many experiments with oils of one kind or another, and the very striking results reported by Dr. Smith, in 1899, led to further experiments and a number employed crude petroleum on a very large scale. A great deal of enthusiasm was aroused and in some cases parties applied this material too freely and very serious losses resulted. Our early experiments and those of the Experiment Station at Geneva showed that it was necessary to apply this material with a great deal of caution. At the outset, in the case of our own work, it appeared as though crude petroleum could be employed with perfect safety, even upon such tender trees as peach and plum. The first result of the application is to kill the scale, and while the development of the foliage is retarded somewhat, later there is a vigorous growth and the trees appear benefited by the treatment. The same results were observed, only to a slightly less extent, the second and third years. The reaction was less marked thereafter and evidences of injury began to be more apparent. We found that these trees had been severely injured. The bark was in a very rough, unsatisfactory condition, the lenticels were enormously distended and the foliage pale in color, abnormally small and

the growth far from satisfactory. These evidences of injury have become so apparent in the last year or two that we have hesitated about advocating the employment of oil, and have turned our attention very largely to other substances which promised to be just as effective and not so dangerous to plant life. It is very difficult to secure a satisfactory summer spray for this insect, and in this connection I wish to call attention to an experience we had with crude petroleum. The scale became established in large numbers in a certain peach orchard in Orange county, and its presence was not discovered till midsummer, at which time some of the trees were literally overrun by the pest. This was extremely unfortunate, as a great many peaches are grown in the immediate vicinity, and the inspector in charge of that section felt that the situation justified heroic measures. He did not feel like insisting that the trees be cut and burned, and as a compromise recommended that they be thoroughly sprayed with a mechanical crude petroleum emulsion, using 20 per cent. and 25 per cent. oil. There was a chance of the trees surviving, while it was known that the petroleum would control the breeding in a satisfactory manner. The spraying was done in midsummer as directed, and much to the surprise of those in charge of the work, serious injury did not result. The 25 per cent. mechanical emulsion caused the dropping of a portion of the leaves. It was not, however, excessive, whereas the 20 per cent. mechanical emulsion appeared to cause no appreciable injury. Owing to procrastination and other causes, the same conditions confronted the inspector the following year and a similar application was made. Again the trees did not suffer much injury, but somewhat to our surprise the breeding of the pest was not satisfactorily checked. This may be explained possibly by lack of thoroughness in application. It is certainly very difficult to thoroughly spray trees in full foliage. This experience is alluded to not for the purpose of recommending this application, but simply to call attention to what has been done and under some conditions the writer would feel justified in recommending such treatment.

Crude petroleum is still used to some extent in both New York and New Jersey, and Dr. Smith, in a recently issued bulletin, states that this is the only material which has not

been more or less of a disappointment in that State the past season. He adds that several chemists are attempting to make a prepared petroleum which will either dissolve in or mix readily with water, and is in hopes that this material will prove a thoroughly satisfactory remedy for the San José scale. Our experience with oils, as stated above, indicates that fruit trees in this latitude will not stand yearly applications, and even though it is possible to make a perfect emulsion, there is still the danger that repeated applications would have a cumulative effect and ultimately result in severe injury.

Before passing to a consideration of lime-sulphur washes, it may be well in the interests of completeness to refer very briefly to our experiments with a caustic soda solution, a remedy extensively advertised last spring in certain papers. One pound to six gallons of water was employed, and the results at the end of the season were that the trees sprayed with this material were very little better than those unsprayed, and as a consequence in this latitude it can hardly be considered as valuable in checking the San José scale. This simply confirms earlier experiments by various workers and is alluded to only because its employment was rather extensively advocated early in 1904. Another material which appeared to be promising was a bordeaux mixture to which 2 oz. of corrosive sublimate was added to each 50 gals. This was applied in early spring in the same way as other washes, and the results, so far as we could determine, were no better than those secured with the caustic soda solution, so far as controlling the San José scale is concerned.

Experiments with lime-sulphur washes were begun in 1902 and have been continued both by the State Experiment Station and the writer up to the present time, and in most instances the results have been very satisfactory indeed. Portions of our earlier work were somewhat unsatisfactory, particularly in the vicinity of Albany, and we now believe this result was due largely to a considerable proportion of the trees having been sprayed with oil the previous year, and as a consequence the later application did not adhere in a satisfactory manner. This belief is further supported by the results obtained the three following years. The experiments conducted by the State Experiment Station at Geneva have given fully

as successful results as our own, due in part perhaps to different methods employed, and as a consequence we are indorsing these washes to the exclusion of almost anything else.

A number of investigators have made repeated attempts to study the chemical character of lime-sulphur washes and thus gain an idea of the essentials necessary in controlling the San José scale. Unfortunately the chemistry of lime sulphides appears to be almost unknown ground, and as a consequence entomologists have obtained very little satisfaction from chemists. It may be remembered that the original lime-sulphur salt wash is said to be a sheep-dip which, when the sheep disappeared in the West, was applied to trees with beneficial results. We have been considerably interested in the chemistry of this wash because we could not help feeling that the combination might be modified to advantage, and not being a chemist and unable to obtain much help from chemists, we adopted the other alternative and studied the wash in a practical way. In the first place, we figured out a number of formulæ and had washes prepared in the laboratory, observing the results closely and using them as a guide to larger outdoor operations. One of the old lime-sulphur-salt washes called for 40 lbs. of lime, 20 lbs. of sulphur and 15 lbs. of salt to 60 gallons of water, and the authorities insisted upon boiling from one to two or even three hours. A study of this formula convinced us first of all that there was a very large excess of lime. Laboratory experiments showed that we apparently obtained just as good a combination when considerably less lime was employed, and field work not only supported this conclusion, but showed that there was less danger of the dry wash scaling or peeling off when the smaller amount of lime was employed. The question also arose as to the efficacy of salt, and upon trying washes without this, we obtained just as good results as though it were present, consequently we do not recommend its employment. The prolonged boiling and diluting with hot water required by the old formulæ made the preparation of this wash very laborious, and our laboratory experiments again showed that so far as color, indicating the relative proportion of the sulphides, was concerned, a very good combination was effected in thirty minutes' active boiling. It will be interesting in this connec-

tion to allude briefly to the work of Professor Horton in Delaware, and Professor Alwood in Virginia, both of whom made studies of the lime-sulphur washes, employing tests for alkalinity, for soluble sulphur and specific gravity, and their work in the main may be said to harmonize with our conclusions; namely, that very little is to be gained by more than thirty minutes' active boiling.

To make a long story short, it may be said that we have tried many laboratory and field experiments with varying quantities of lime and sulphur, with and without salt, and with a varying length of boil from thirty minutes to over two hours or more. The practical results have been that a relatively small amount of sulphur with a slight excess of lime, boiled actively for thirty minutes and then diluted with cold water, has in every instance given as good satisfaction as a wash prepared by the more laborious methods at first insisted upon.

A number of experimenters have arrived at the same conclusions. It is interesting to refer briefly to the work of the Georgia State Board of Entomology as published in Bulletin 14, issued last November. Professors Newell and Smith have been working along similar lines and their conclusions and ours are almost identical in most respects. Last fall Professor Parrott, of the State Agricultural Experiment Station, and the writer examined each other's experimental areas and went over the subject carefully. As a result of this conference and comparison of data, we decided in the interests of unity to recommend a certain formula, which we knew to be good, even though others might be just as effective. The proportions are as follows: *20 lbs. of good lime, 15 lbs. of sulphur to 50 gals. of water with at least thirty minutes' active boiling, with the employment of salt optional.* There are several methods of preparing this wash, and where it must be made in an iron kettle very satisfactory results have been obtained as follows: Several pails of water are brought nearly to a boil, the lime added, and as soon as slaking begins the sulphur is put in and the whole mixture violently stirred and kept boiling for at least thirty minutes. This should result in producing a wash with a deep brick red color or even greenish tinge. The mixture should then be strained through mosquito netting or something of equal fineness, and in our exper-

iments we have diluted with cold water; others recommend hot water, though we have not found it necessary. This wash may also be prepared by steam boiling, a process with which all are familiar, and it need not be described in this connection. It is not claimed that this wash is superior to all others, but the quantities given are easily remembered, its method of preparation as simple as that of any, and the results obtained therewith exceeded by none. In fact, last year's results with almost all lime-sulphur washes were so nearly uniform that it was extremely difficult to draw adequate distinctions.

Many are very adverse to boiling a larger or smaller amount of liquid and put this forward as a reason why lime-sulphur washes cannot be employed. This material is very disagreeable to have around, and in many places no suitable vessel is at hand for the requisite boiling, and as a consequence several washes have been devised which require no boiling by means of fire. These are popularly known as unboiled washes, though in reality they are chemically boiled washes. The oldest wash of this character was brought forward several years ago by Professor Lowe, of our State Experiment Station, and has been experimented with by him and also by his successor, Professor Parrott. This wash, accepting as standard the quantities of lime and sulphur given above, calls for *from four to six pounds of caustic soda to 50 gals. of water. The lime is slaked preferably with warm water, and while the reaction is in progress the sulphur, which has previously been made into a thin paste, is added and thoroughly mixed with the slaking lime. The caustic soda is then put in and water supplied as needed, the whole being stirred thoroughly.* After the mechanical action has ceased the mixture may be strained and diluted as stated above. Professors Newell and Smith of Georgia state that they obtain a much more satisfactory mixture if the sulphur is first made into a paste in an iron vessel with a small amount of boiling hot water, and the caustic soda then slowly added and the mixture kept well stirred, boiling water being supplied from time to time to keep it from getting too stiff. This, if followed out, will result in dissolving all the sulphur, and then the lime is added and slaked as described above. Others have reported a simi-

lar experience in the preparation of this chemically boiled lime-sulphur wash.

We have developed a new lime-sulphur wash in which sal soda is used to assist in bringing about the chemical combination instead of caustic soda, and in this connection it is only fair to state that we were led to experiment with this material after learning of Dr. Britton's work with sodium sulphide. Our results with sal soda were most gratifying. Several formulæ were employed and as the outcome of our experiments we have decided to recommend for further experimental work, particularly where small amounts of the wash are to be employed, the same amounts of lime and sulphur mentioned above, namely: *20 lbs. of lime, 15 lbs. of sulphur, and 10 lbs. of sal soda to 50 gals. of wash. This may be prepared by placing five or six pails of hot water in a wooden barrel, preferably a thick pork or oil barrel, add the lime, quickly following that with the sulphur and sal soda and stir actively till the slaking is practically completed.* It is usually necessary to add cold water at intervals to keep the mixture from boiling over. After the rapid bubbling or boiling is practically completed, cover the open barrel with burlap and allow it to stand thirty minutes or more. A caution regarding stirring should be made here, since it seems to affect the composition of the wash. There should be enough agitation to keep the materials from caking at the bottom, and yet not so much as to seriously hinder the slaking of the lime and accompanying chemical changes. This method gives an excellent compound so far as deep color and little sediment is concerned, provided it is properly prepared, and one of the essentials in making it appears to be thoroughly stirring at the outset, in order to intimately mix the lime, sal soda and sulphur. A deep red or even pea green color should be secured. This wash sprays nicely, and in experiments commenced last spring has given as good results in killing the San José scale as any of the lime-sulphur washes. It has several advantages. It requires no boiling and the sal soda is a common material, easily handled and obtainable in almost every locality. It is also a little cheaper, as the amount of sal soda necessary costs less than the quantity of caustic soda advised for preparing 50 gals. of wash. This material has been used but one season.

though it was tried in several localities. Professor Lohead of the Ontario Agricultural College states that in his hands it was just as successful as other lime-sulphur washes, and a few others obtained from good to excellent results, in spite of their inability to give it a thorough trial. This wash, as previously stated, has been used but one season and consequently we cannot recommend it without qualification. We do feel that it is a very promising mixture and hope those so inclined will make further tests, as we intend to do another season.

Another unboiled or chemically boiled sulphur wash has been highly recommended by Mr. A. N. Brown of Delaware. Its preparation is substantially as follows: *Make a paste of 20 lbs. of sulphur with two gals. of boiling water. Put 40 lbs. of lime in a barrel and slake the same with 12 gals. of boiling water, immediately adding the sulphur paste. Cover with an old blanket and let it cook 20 minutes; this is then diluted to 50 gals. and 15 lbs. of coarse salt added.* This wash has been experimented with in New York State by Professor Parrott and has also been employed by private individuals. The speaker was allowed to look over the trees in the experimental area and also examined a portion of an orchard sprayed with this mixture. In the latter case the compound was made by an exceedingly careful man who followed directions closely and made a very thorough application. In neither instance, in the speaker's judgment, were the results equal to those obtained by a boiled wash or those with the chemically boiled washes described above. It can be used, but we fear its employment will result in more or less disappointment and consequently do not feel able to indorse it at present.

It may be said, in passing, that the experiments conducted at our State Experiment Station, by both Professors Lowe and Parrott, agree with our results as stated above. It is now my purpose to call attention briefly to another phase of the lime-sulphur treatment; namely, its value in controlling other insects and fungous diseases. This aspect of the subject received particular attention from our Experiment Station people, and most of the data relating to this is taken from an abstract summarizing last year's work, kindly placed at my disposal by Professor P. J. Parrott.

Professor Parrott calls attention to the fact that the fungicidal value of these washes was recognized in California many years ago, and among eastern experiences we may refer to that of Professor Lowe, who, in 1902, reported that apple trees sprayed with sulphur washes were quite free from apple scab, while untreated trees were much affected, and in his work in Niagara county peach trees sprayed with this wash were less injured by leaf curl than others. Independent investigations the same year by Professors Burgess and Parrott, demonstrated that timely application of lime-sulphur washes controlled leaf curl and this has been substantiated by our own experience. Professor A. D. Selby, of the Ohio Station, made an extensive study of peach scab in 1902, and believed that applications of the wash proved of some value in preventing this disease.

Before discussing the later results obtained by Professor Parrott, it will be well to outline briefly the method of spraying commonly followed in our New York orchards. There is, first, an application of poisoned bordeaux mixture before the opening of the blossoms for the prevention of scab and the control of bud-moth, case bearers, canker worms and other early leaf feeding insects; second, another just after the falling of the blossoms, also directed against scab, various leaf feeding insects and especially the codling moth, and a third spraying with these materials is usually given a week or ten days later for the control of the pests named above.

Experiments conducted in 1904 by Professor Parrott in collaboration with Professor Beach, are extremely interesting. Their investigations were extensive, they having under experiment 1,497 large apple trees, 2,822 pear trees, 348 cherry trees and 1,359 plum trees. Owing to the absence of disease no results, aside from the destruction of the scale and pear blister mite, have been obtained upon the value of sulphur washes for the treatment of the latter three fruits. Much more definite results have been secured upon apple trees, and the work is most promising, since these gentlemen obtained further evidence of the two-fold nature of these washes. They have found that one application of a sulphur wash, supplemented with the usual second and third sprayings of poisoned bordeaux mixture, result in controlling the scale, apple

scab and the codling moth. Forty-two trees were in this experiment, consisting of about equal numbers of Baldwins and Greenings. The effects of the treatment upon the codling moth and scab are shown by the following table.

EFFECTS OF SPRAYS UPON SCAB AND CODLING MOTII.

	GREENING.	Scabby Per cent.	Wormy Per cent.
Check		71.0	46.5
3 Bordeaux-arsenical mixture		3.7	7.3
1 Sulphur wash and 2 bordeaux-arsenical mixture		4.2	9.8
1 Sulphur wash		55.5	46.4
	BALDWIN.		
Check		95.3	31.0
3 Bordeaux-arsenical mixture		23.0	6.8
1 Sulphur wash and 2 bordeaux-arsenical mixture		14.7	13.4
1 Sulphur wash		60.5	38.3

There was an average of 83.1 per cent. scabby fruit upon the checks and 38.7 per cent. wormy fruit as compared with 61 per cent. of scabby fruit and 42.3 per cent. wormy fruit from trees treated with the sulphur wash alone, making a difference of 22 per cent. less scabby fruit upon trees sprayed with lime-sulphur washes. Those treated with the sulphur wash, followed by two applications of poisoned bordeaux mixture, had 9.9 per cent. of scabby fruit and 11.6 per cent. wormy fruit, which corresponded very closely with the results obtained in controlling these two pests with the usual three applications of poisoned bordeaux mixture. By far the most satisfactory results were secured by substituting the lime-sulphur wash for the first treatment with the bordeaux mixture. This resulted in a reduction of 51.1 per cent. scabby fruit and 30.7 per cent. wormy fruit, as compared with trees sprayed only with the sulphur wash. It is evident from these results that the plan of spraying best adapted for the treatment of apple trees for scale, scab and codling moth, is one application of a lime-sulphur wash during the dormant season, followed by the usual second and third treatments with the poisoned bordeaux mixture.

It may be encouraging to pear growers if we refer briefly to our experience with a lime-sulphur wash in checking the dreaded Pear Psylla. It may be remembered that this pest was exceedingly abundant and destructive in 1903, particu-

larly in the Hudson river valley, where almost every pear tree was more or less seriously affected and many badly damaged. A number of pear trees in sections where the *Psylla* was abundant, were sprayed the preceding spring with a lime-sulphur wash, and in no instance was there serious damage by this pest, indicating that in all probability this application is of considerable service in holding this species in check.

The time of application of these washes is of considerable importance, and we have, as a rule, advocated their use in early spring, stating that the best period was just before the buds began to swell. It is obviously impossible to spray all trees at this ideal time, and owing to weather conditions there are many who would like to make the applications in the fall. The most exact data relative to effects of fall spraying with lime-sulphur washes is given by Professor Parrott in Bulletin 254, and I can do no better in this respect than quote his general summary.

"The results obtained in the different orchards by the fall applications of the sulphur washes show considerable variation in the effects of the treatments upon leaf and fruit buds. In Orchard I the spraying was accompanied by a reduction in the amount of the bloom and foliage. There was an average loss of 94.3 per cent. of the blossoms and 67.8 per cent. of the leaves upon the peaches, and 83.5 per cent. of the blossoms and 57.8 per cent. of the leaves upon the plums sprayed with these washes. The least destructiveness was shown by the lime-sulphur wash, which caused a loss of 82.7 per cent. of the blossoms and 27.1 per cent. of the leaves upon the peaches, and 61.5 per cent. of the blossoms and 33.1 per cent. of the leaves upon the plums. With the dropping of the blossoms there was a marked improvement in the condition of the sprayed trees, which, with the exception of the smaller yield of fruit, ultimately equalled the checks in appearance. In Orchard II plum blossoms were reduced by 10 to 50 per cent., with slight injuries to foliage. The Morello cherries lost 5 per cent. of their blossoms. Apples and pears were similarly affected, and crabs sustained no apparent injuries. Trees much infested with scale were either killed or severely injured by the winter. In Orchard III the sprayed trees, with the exception of those sustaining injuries by the scale

and the winter, were unaffected by the treatment. The sprayed apples showed later in the season increased vigor and healthfulness as a result of the control of the scale."

It is unfortunate that these applications were made at the beginning of an exceptionally severe winter, and as a consequence our conclusions may be modified later. The desirability of fall applications is at least an open question.

Recent disquieting reports emanating from New Jersey as to the poor success obtained with lime-sulphur washes, led us to inquire rather closely into New York conditions, with the result that, so far as we could learn, wherever the trees were thoroughly sprayed with a lime-sulphur wash the scale was kept in control in a very satisfactory manner. This is not intended to reflect in the slightest upon the work done in New Jersey, but refers simply to our New York conditions, and the statement is made in this connection because we cannot help feeling that the lime-sulphur washes at present afford the most practical method of controlling the San José scale, despite the fact that their preparation is laborious and their application exceedingly disagreeable. Most of our experiments have been tried upon small trees because we did not wish to have the effectiveness of the wash marred by defective treatment. The thorough spraying of large trees is a difficult problem, and we wish in this connection to refer briefly to the work of Mr. W. H. Hart, of Poughkeepsie, who has been obliged to fight this scale on large apple trees for some years and who, in the main, has kept it in control in a very satisfactory manner. The speaker had the privilege of examining his orchard last fall, and wherever Mr. Hart had been able to spray with the wind, making one application from one side and then treating the other later with the wind in the opposite direction, the pest had been kept under in a very satisfactory manner. Mr. Hart tells me that it is impossible to secure satisfactory results on large trees unless the spraying is done with the wind, because the breeze carries the spray through the entire tree and covers the limbs much more thoroughly than could be done with any reasonable amount of labor without its aid. Extremely thorough applications are necessary if we would get the best results with this or any other spray, and it may be advantageous in some

cases to make not two, but three or even four applications within a few days of each other, each with the wind in a different direction. This has been done in a few instances and is perhaps advisable in very badly infested orchards or in any place where there is reason for obtaining the very best results. Here, as in many other places, one part insecticide to three parts of application should be the rule. This formula is very rarely given and too often overlooked by those who would obtain good results in controlling this and other pests.

Following Dr. Felt's excellent paper a number of questions were asked and answered.

MR. WELLS: I would like to ask, Mr. President, this question: If, with the steam pipes at sixty-five pounds pressure, it is necessary to run them clear down to the bottom of the barrels, and what are the different ways, if there are any, of using it in the barrel?

DR. FELT: I think you should run your pipes down to the bottom, of course, not quite to the bottom, and you should also gauge the pressure just sufficient to make the water boil, without having it boil up and carry the water and the mixture out. Simply run the pipes well down, so that the steam will do its work sufficiently, and without wasting the mixture. Usually we have to shut the steam off a little, or it will be apt to boil over, especially if the pressure is pretty good.

PRESIDENT GULLEY: It gives me great pleasure to announce the next speaker, who will speak to you on "Some new spray mixtures for controlling the scale." It gives me great pleasure to introduce Prof. C. P. Close, of the Delaware Experiment Station, because he and I were boys together, and later we have done a little work together, so that I know something about him. I am glad to present to this audience Prof. Close.

PROF. CLOSE: Mr. President, and members of the Connecticut Pomological Society, ladies and gentlemen: I am very glad indeed to have the opportunity of presenting to you this morning the results of the work which I have been doing during the past season with some new spraying mixtures. I have presented this subject at one other meeting of this kind,

but while all the results which I shall give to you are substantially the same, there have been some changes. I think it pays best to give a complete account of work of this character, and I trust that my paper will not seem long to you, and will not seem as long to you as it did to me in preparing it.

You will notice that I have some of those bottles here showing samples of these different mixtures, and I will pass them around. You know there is nothing like a bottle to keep a man awake. The title of my paper is "New Kerosene-Limoid mixtures for controlling the San José scale."

The New Kerosene-Limoid Mixtures for Controlling the San José Scale.

By C. P. CLOSE, Horticulturist of the Delaware Agricultural Experiment Station, Newark, Delaware.

For a number of years it has seemed to the speaker, as he has studied the San José scale and watched its depredations, that the opportune time to strike it is during its breeding season, that is, during the summer. The insects are easily killed then, because the young are either not at all, or only slightly protected, while the scaly covering of the old ones does not clasp the bark so tightly but that the spray mixture will readily reach the tender insects beneath.

If only the young scales on a certain tree can be killed from time to time and be prevented from breeding, the pest will be eradicated from that tree, since the old females die of their own accord after producing young for about six weeks. But diligent spraying will kill not only the young but also hosts of old ones, thus hastening the eradication of the pest.

It was with the idea of determining the practicability of the summer eradication of the scale that tests were made during the growing season. That this can be done satisfactorily there is abundant proof from the results obtained. It was also desired to obtain a remedy for both summer and winter applications that would be easily prepared, less disagreeable

to apply and at least as effective as the very best remedies heretofore used. From the results already obtained in the experimental tests, the K-L mixtures can be pronounced most promising in all of these respects.

WHAT KEROSENE-LIMOID IS AND THE USE OF EACH INGREDIENT.

K-L is a mixture of kerosene, hydrated lime and water. Limoid is the particular form of lime which was used in developing the mixtures and from which they were first named, but now that other forms of lime are also being used, it will doubtless be best to speak of them as kerosene-lime mixtures, or simply K-L. The name K-L was adopted because K and L are the initials of kerosene and limoid and a short name was desired both for writing and speaking.

The limoid is hydrated or dry slaked ³magnesian stone lime. To prepare it the stone lime is ground, then dry slaked and sifted. It is quite probable that any good grade of stone lime can be dry slaked into an exceedingly fine and dry powder to replace limoid. The speaker has done this and has made with it a K-L which appeared to be the equivalent of K-L made with limoid. A poor grade of lime would not be satisfactory, although by carefully dry-slaking and sifting it, a portion might be used. At first it was thought that a large proportion of magnesia was necessary in the lime—limoid is one-third magnesia—for making K-L, but recent tests indicate that good lime with less than 5 per cent. of magnesia apparently makes equally good K-L. To simplify matters, air slaked or fallen lime was tried, and it too proved to be very satisfactory in making K-L.

There seems to be a difference between limoid and dry slaked or air slaked lime in the power of holding kerosene. When the last two forms of lime are used the mixture must be agitated violently five minutes to emulsify it; when limoid is used the agitation need continue only three minutes. When once thoroughly emulsified the kerosene is not likely to separate from any of these forms of lime.

An excellent method of dry slaking lime was suggested recently by Prof. M. B. Waite of the Department of Agriculture, at Washington. The stone lime is broken into small

pieces and a small portion is put into a wooden box; upon this lime is sprinkled a little water, and when slaking is nicely started the balance of the lime is poured in and some kind of a cover is thrown over the box to keep in the heat and steam, which cause the entire amount of lime to slake into a dry impalpable powder. This should be carefully sifted through at least a 40-mesh sieve and it is ready for use.

The question has often been asked, "What is the office of the lime in K-L"? The limoid, or hydrated lime, is primarily a carrier for the kerosene. There is some peculiar affinity between the two by which the limoid seizes the kerosene and carries it where the man behind the nozzle directs. It also makes possible a mixture of absolutely uniform strength. There is doubtless a smothering effect on the scale by the limoid, since K-L sprayed on a tree makes a covering resembling thin whitewash.

There is no chemical action between the kerosene and lime. The Station Chemist has tested kerosene in which limoid remained about two months and there was not a trace of anything taken from the limoid.

The kerosene is of course the killing agent. In summer it seems to do its deadly work and to evaporate within a few days. In fall and winter it persists two or three weeks at least and seems to extend its killing period to six or eight weeks, or even longer. This last statement is borne out by frequent examinations in which it was noted that a large percentage of scales was dead at each successive examination up to eight weeks or longer after spraying.

HOW THE MIXTURE IS MADE.

To make K-L, the kerosene and lime in proper proportions are thoroughly mixed together into a thin "sloppy" mass, and should any kerosene separate out a little more lime must be added. One pound of lime will take up, or absorb, one quart of kerosene and in this proportion the mixture should always be made, that is, four pounds of lime to one gallon of kerosene. The different forms of lime used seem to be about uniform in their ability to absorb kerosene. The required amount of water is then added to dilute to the desired strength, and the whole mixture is first stirred with a

paddle to throw all of the "sloppy" mass into suspension in the water. It is then pumped back into itself most violently with the spray pump for from three to five minutes, depending upon the form of lime used. This is necessary to form an emulsion out of which the oil will not separate. Samples made in this way have been kept two months without the kerosene becoming free from the lime, except perhaps some which escaped by evaporation. Although the K-L does not deteriorate in a reasonable length of time, it is probably best to make it from day to day as needed. It is always desirable to use a force pump if possible in preparing K-L, but a good mixture has been made with a hoe, as described by Mr. Collingwood in the *Rural New-Yorker*. The hoe method applies the same principle used in churning butter in the old style dasher churn. The important and absolutely necessary thing to do is to agitate the mixture violently enough to emulsify it so the kerosene will not become free. When properly made, any of the K-L mixtures will spray as readily as pure water through any nozzle on the market. Like all other spraying mixtures they should be agitated while being sprayed.

AMOUNT OF MATERIAL IN DIFFERENT STRENGTHS OF K-L.

The proportion of lime, kerosene and water herewith given is for 50 gallons of mixture:

For 10%	K=L use	5	gals. kerosene,	20	lbs. lime,	45	gals. water.
" 12½%	K=L	6¼	"	25	"	43¾	"
" 15%	K=L	7½	"	30	"	42½	"
" 20%	K=L	10	"	40	"	40	"
" 25%	K=L	12½	"	50	"	37½	"

To make K=L=B (kerosene=lime=Bordeaux) use exactly the same proportions of kerosene and lime as just given, but substitute Bordeaux mixture for water. The Bordeaux mixture is made by dissolving the 4 pounds of copper sulphate and diluting with water to 25 gallons. Slake 4 pounds of lime, add water, strain, and dilute to 25 gallons. Pour the copper sulphate solution into the lime water and stir. The limoid or dry slaked lime, 4 pounds, may be used instead of stone lime.

ADHESIVES WITH K-L.

A number of adhesives were tried with K-L to determine if anything could be added to increase its efficiency. The one tested most during the summer was rosin soap and it

seemed to improve the efficiency of K-L considerably. It made the mixture spread better, adhere better and kill somewhat better than plain K-L. There was also a tendency to increased foliage injury when rosin soap was used, but not enough to condemn it.

To make rosin soap place 3 pounds of sal soda and 6 pounds of rosin in 4 gallons of water. Heat this to the boiling point, stir almost constantly, and continue the boiling at least one hour. Add water to replace that lost by boiling so as to make 4 gallons of rosin soap.

One quart of this is sufficient for 50 gallons of K-L. When this soap is added to Bordeaux or K-L mixture, the sal soda in the soap unites with the lime in the Bordeaux or K-L, forming caustic soda, which will injure foliage if used too liberally.

Bordeaux mixture is a splendid adhesive and is to be commended when the fruit grower is spraying for fungous diseases as well as for San José scale or other sucking insects. K-L with it has proved very efficient.

Copper sulphate is perhaps the best adhesive tried, but for some unknown reason the K-L prepared with it is not always efficient in killing scale. Why it is that Bordeaux mixture and K-L are efficient and copper sulphate and K-L are not always so, the speaker cannot explain.

Salt is supposed to increase the adhesiveness of the lime-sulphur-salt wash, so it was tried with K-L. In the chemical union between lime and salt, caustic soda was formed which destroyed much of the foliage within a few hours. Salt cannot be used during the growing season, although it is desirable during the dormant season, one pound to 5 gallons of mixture.

Caustic soda, one pounds to 12 gallons of K-L, makes a most satisfactory smooth and effective mixture for use during the dormant season. A few days after spraying this discolours to a rusty brown. The objection noted was a caustic action on the hands and face when the spray struck them. Caustic soda increases the expense somewhat, but perhaps a smaller amount than one pound to 12 gallons will be effective.

Sulphur was tried in different ways and it absorbs kerosene readily, but, when water is added, sticky disagreeable clots are formed which make the mixture unsatisfactory.

DIFFERENT FORMS OF K-L MIXTURES.

"K-L" as mentioned before is kerosene, lime and water. This is an insecticide for sucking insects only. "K-L-B" is kerosene, lime and Bordeaux mixture, and is worthy of trial to destroy fungous diseases as well as sucking insects. This is made exactly like "K-L" *except* that Bordeaux mixture is used instead of water. "K-L-B-P" is kerosene, lime Bordeaux mixture and poison. It is made like "K-L-B" except that the poison, whether Paris green, disparene, arsenite of lime or soda, or green arsenoid, is added to the Bordeaux mixture. This is a theoretical combination panacea for all the ills and pests of the orchard, be they sucking insects, biting insects or fungous diseases. It is worthy of serious consideration and trial as a "Jack of all sprays."

In making K-L with rosin soap a portion of the water should be used to dissolve the soap. After the mixture has been agitated two minutes the soap solution is added and the entire lot is agitated one minute longer if limoid is used, and three longer if other forms of lime are used. The directions for adding rosin soap apply to caustic soda and salt also.

SPRAYING DURING THE GROWING SEASON.

One fact to which your attention must be called was the antagonistic behavior of the weather man toward these experiments during the summer. Almost invariably when we planned spraying work for the day he would marshal his storm clouds and hold them in leash out of sight until the spraying was done, then would turn them loose to deluge our work. When we sprayed in the forenoon a heavy rain would fall during the afternoon. When we sprayed in the afternoon a terrific storm would burst upon us during the night. While these weather conditions would not have been chosen for the work, perhaps they were not amiss, since they made the test a more severe one for the spray mixtures, and the results have more real significance than they would have had in ideal sunshiny weather.

For use during the summer it is safe to apply 10 per cent. K-L, with or without adhesives, to apples, pears, peaches, plums, cherries, quinces, currants, etc. From tests made it seems perfectly safe to advocate 12½ per cent. K-L on all

of these fruits and even 15 per cent. on apples and pears. A slight leaf injury may follow, but since the stronger the mixture the more destructive it is to the scale, is it not good practice to risk a little for the sake of efficiency? Even though a slight leaf injury follows, is it not preferable to the injury caused by the scale?

A few of the results obtained with different strengths of mixture will now be given.

15 PER CENT. K-L WITH ROSIN SOAP.

A pear tree perhaps 14 years old, with a thick bushy top, with rough cracked bark on trunk and larger limbs, plastered with scale, and with the twigs, leaves and fruit covered with the younger insects, was sprayed on July 20. In this instance a little more rosin soap was used than is now advocated. The mixture was applied through a Vermorel nozzle with medium opening and there was no clogging. Examinations were made from time to time to note results. On August 1 no live scales could be found and the mixture was sticking remarkably well on both leaves and limbs. A good many leaves had turned black and were dead, but there were not enough in this condition to seriously injure the tree.

On August 10 the spray was still sticking well and a few old scales were alive on the rough bark and on the fruit, but none on the leaves. There were also a few young ones moving at this time.

In an effort to eradicate the scale by two summer treatments from a tree so badly infested and so difficult to spray thoroughly as this one was, a second application was made on August 18. On the 26th a most careful examination revealed only three live scales and these were young ones. There were doubtless more on the tree, but they could not be found. The next examination was made six weeks later on October 8, when one old female and a few young were found in one place and a few young ones in two other places. These results are most satisfactory, although a few insects remained for seed.

A test was made to completely eradicate the scale with one spraying from young trees of three years' growth. Fifteen per cent. K-L with rosin soap 1 quart per barrel, was used

on one apple and one pear tree August 24. The apple tree had a good sprinkling of scales, while the pear tree had only a few. The trees were given a heavy coating, which proved efficient. Upon examination October 8 only a single little orphan scale was found and it must certainly have been carried in some way from an infested tree near by. These trees sprayed with rosin soap in the K-L showed considerable leaf injury, while similar ones, treated with K-L only, showed slight injury. Some of the spray was still sticking to the trees October 8.

The same mixture was sprayed on peach foliage for leaf resistance August 23. Very slight injury to leaves, but none to buds was detected; the last examination was made November 18.

15 PER CENT. K-L.

This was applied on July 2 to a pear tree quite badly infested, especially with young scales. It was decidedly effective on the moving young, on some old ones, and on the intermediate sizes as shown by examination July 20. There was no foliage injury and the mixture was still sticking to the tree. A very few young were being produced, so a second application was given July 21. This was so effective that not a single live scale could be found until August 26, when 10 young ones were discovered. The lower part of the tree showed considerable, but not serious, leaf injury from the second spraying. Another spraying at that time would undoubtedly have eradicated the pest, but it was preferred to leave the tree undisturbed to see what condition it would be in by winter. The scales multiplied so there was quite a sprinkling on the rough bark by October 7 and a further increase by November. The lesson from this is that the warfare must be relentless; no quarter can be given to this pernicious pest.

In the trial to eradicate the scale with one application from apple and pear trees of the third year's growth, the 15 per cent. K-L was a complete success. This was accomplished with slight leaf injury.

To test for foliage susceptibility to kerosene injury, cherry, peach and wild goose plums were sprayed July 2.

The peach was very slightly injured, the cherry and plum not at all. On August 23 another peach tree was sprayed and only slight leaf injury followed.

10 PER CENT. K-L, WITH ROSIN SOAP.

The spraying was done July 2 on a pear tree about 14 years old. There was a very bad infestation on limbs, leaves and fruit, the latter being already badly injured. The mixture spread ideally and covered all parts of the tree. On July 11 the material was sticking perfectly and had been most efficient in killing the insects. Those on the leaves were apparently all killed, as were also most of those on the fruit and limbs. Ten days later the tree was still coated with spray except on the north side, where the whipping of the wind and the beating of the rain had loosened it. The fruit was cleaned up nicely and the crop was saved. The scales seemed to be dead, except on a few places on the north side where they were massed and clustered together on short rough spurs, where the spray had been rubbed off. There were a few old ones with a few young produced since the spraying.

Because the spray was whipped from the north side this portion of the tree was treated again July 21. The very rough bark and the thick matting of scaly coverings protected a few old females, which began to produce young about August 10. The entire tree was sprayed August 15, but this application was not so efficient as the first had been. There was a slight scattering of young on the rough bark ten days later. No more spraying was done and there is quite a sprinkling of scales on the tree at present.

Another badly infested pear tree was sprayed on July 12 and on August 10. Within an hour after the first spraying a heavy rain fell and a few hours after the second application a terrific storm swept over that section. Under these conditions the treatment was only partially effective.

The 10 per cent. K-L with rosin soap was sprayed on cherry and peach foliage without causing injury.

10 PER CENT. K-L.

A pear tree similar to the last, but with extra rough bark entirely plastered with scales, was sprayed three times, June

30, July 21 and August 15. The rough bark and masses of old scaly coverings formed such a protection that the remedy was only moderately efficient.

Ten per cent. K-L was not injurious to peach foliage.

15 PER CENT. K-L-B (*Kerosene-Lime-Bordeaux Mixture*).

The K-L-B makes one of the finest and smoothest mixtures imaginable. It will remain in suspension longer than the very best Bordeaux mixture. On August 23 it was sprayed on a young pear tree with a few scattering scales. There was no perceptible leaf injury and it was very effective. On October 7 not any young scales and only three old ones could be found.

A four year old apple tree badly crusted with scales was sprayed August 23. This tree had been infested at least two years. Seven weeks after spraying there was a very slight sprinkling of both old and young. Considering the serious infestation this treatment was most effective.

Peach foliage was treated with 15 per cent. K-L-B with very slight injury following.

12½ PER CENT. K-L-B-P (*Kerosene-Lime-Bordeaux-Paris Green*).

A large pear tree badly infested was treated August 19 with 12½ per cent. K-L-B-P. Of course a terrific rain storm followed in a few hours, but the result of this treatment was most satisfactory.

SPRAYING DURING THE DORMANT SEASON.

The first spraying done with K-L was with a 25 per cent. mixture applied to part of a native plum tree on the Experiment Station grounds, March 30, 1904. About six weeks later the Station Entomologist made a careful examination and could not find a living scale on the sprayed portion.

COMPARISON WITH THE LIME-SULPHUR-SALT WASH.

In a badly infested peach orchard near Newark the Station Entomologist conducted some experiments last spring with the boiled lime-sulphur-salt wash. To compare remedies side by side the speaker selected eight trees and sprayed them on

April 13 with 20 per cent. K-L. On May 20 the trees were examined, but not a living scale could be found. The mixture had cleaned up the bark nicely and was still adhering well, but not quite so well as was the lime-sulphur-salt wash. Not until June 28 were a few straggling young found on sprayed trees. The results of both remedies were identical except that one tree, designated as Number 2 in the K-L test, had quite a good many young scales at this time. No satisfactory explanation can be offered for the condition of this tree. The unsprayed trees which had only a sprinkling of scales in the spring were badly infested at this time.

On July 1 a second spraying with 10 per cent. K-L was given to four of the trees with only an occasional young scale, and to tree Number 2 with a good many young ones. On July 9 no live scales could be found on any of these trees, however, the old females had escaped even though they could not be located. Perhaps the spray assisted in concealing them. By August 12, tree Number 2 had a sprinkling of young scales like it had when sprayed July 1. On the other trees sprayed at that time were found, on one tree, one young scale; on another, three or four; on another, half a dozen; on another, about a dozen.

On the trees not sprayed July 1 were found about a half dozen young scales each. They were freer from scale than were many of the lime-sulphur-salt sprayed trees. Some of the latter harbored only an occasional insect, while others had a good many. The check trees were quite covered by this time.

A second summer application of 10 per cent. K-L was given to four of the trees August 17. On the 23d a few scales were found on tree No. 2 and isolated ones on the other trees. Of the eight trees in this experiment two received no summer treatment. On August 23, when the experiment closed, no live insects could be found on one of these and only half a dozen on the other. No further observations could be made because the owner decided to destroy the orchard immediately.

The lesson which this experiment teaches is that 10 per cent. K-L, while it will destroy young scales, is not strong enough to kill the old breeding females, although two or three

applications during the season will hold them in check. A stronger mixture, 12½ or 15 per cent., would doubtless have cleaned them all off since they were not protected by rough bark. The use of 10 per cent. K-L once every ten days for two months will certainly eradicate them, but this increases the expense too much. A stronger mixture with fewer applications is preferable. There was no foliage injury to these trees.

NOVEMBER AND DECEMBER TREATMENTS.

A report can be made on only a portion of this work since time enough has not elapsed since spraying to determine the total effectiveness of the mixtures. An effort was made to discover what percentage of kerosene with different forms of lime, with and without adhesives, will be the most economical combined with efficiency, and what will be the difference of results from different strengths of mixtures.

It requires from six to ten weeks for the late November and December applications to show how effective they have been. The results given are, unless otherwise mentioned, from actual counts made of the scales from different parts of the tree on both rough and smooth bark. While this method of counting is not an absolute index of the condition of all the insects on the tree, it is, moreover, the most reliable means of ascertaining the killing effect of the spray. In making the determinations, only those insects were considered dead which have recently dried up or are badly discolored and in a dry doughy condition. Those that were of normal color or much or little discolored, doughy and juicy, were counted as alive or doubtful. The second class is becoming fewer, while the first class is becoming more numerous. It will no doubt be several weeks yet before all of those which are really killed by the spray will be dried up, so there is no possibility of error in determining their condition. At present they are classed as doubtful, which lowers the real percentage efficiency of the mixture. Limoid was used in making these mixtures, except where special mention is made to the contrary.

15, 20 AND 25 PER CENT. K-L ON PEACH TREES.

Three badly infested peach trees four years old were sprayed November 19, 1904, with 15 per cent., 20 per cent. and 25 per cent. K-L respectively. Examinations from time to time showed that the killing effect was continuing week after week and is not quite exhausted yet. On January 28 the following record was made:—

Tree sprayed with 15 per cent. K-L had 96 3-10 per cent. scales dead, 3 7-10 per cent. alive or doubtful.

Tree sprayed with 20 per cent. K-L had 95 4-10 per cent. scales dead, 4 6-10 alive or doubtful.

Tree sprayed with 25 per cent. K-L had 100 per cent. scales dead, none alive or doubtful.

A good many of the doubtful ones are doomed, so the percentage of death rate is expected to be higher where 15 per cent. and 20 per cent. mixtures were used.

In a three year old peach orchard in Central Delaware were scattering trees quite badly infested. These were stub pruned, leaving only two or three feet of the main limbs. A 20 per cent. K-L mixture was made with a hoe and applied with a whitewash brush November 23. On January 23 specimens of bark from these trees were examined and the scales were practically all dead.

15, 20 AND 25 PER CENT. K-L ON PEAR TREES.

These trees were badly infested and were sprayed December 1 and 2. The results on several of the pear trees are somewhat irregular and are given with some hesitancy. This must be understood and accepted as a report of progress. The examination of these trees was made on January 27.

Tree sprayed with 15 per cent. K-L had 58 4-10 per cent. scales dead, 41 6-10 per cent. alive or doubtful.

Tree sprayed with 15 per cent. K-L had 80 4-10 per cent. scales dead, 19 6-10 per cent. alive or doubtful.

Tree sprayed with 15 per cent. K-L had 80 5-10 per cent. scales dead, 19 5-10 per cent. alive or doubtful.

Large numbers of the doubtful ones are badly discolored and can soon be classed as dead.

15, 20 AND 25 PER CENT. WITH ROSIN SOAP ON PEAR TREES.

These trees were also badly infested, were sprayed December 1 and 2, and examined January 26 and 27.

Tree sprayed with 15 per cent. K-L with rosin soap had 90 per cent. scales dead, 9 1-10 per cent. alive or doubtful.

Tree sprayed with 20 per cent. K-L with rosin soap had 55 per cent. scales dead, 45 per cent. alive or doubtful.

Tree sprayed with 25 per cent. K-L with rosin soap had 98 per cent. scales dead, 2 per cent. alive or doubtful.

There is a wide discrepancy between the results of 15 per cent. and 20 per cent. mixtures with no satisfactory explanation for it. The results of 15 per cent. and 25 per cent. mixtures with rosin soap gave somewhat better results than where rosin soap was not used. However, it is too early yet to make comparisons and it must also be remembered that this spraying was done when the scale was in the condition which makes it hardest to kill. Of the 2 per cent. alive or doubtful scales where 25 per cent. K-L was used, only one insect was found, which seemed to be really alive.

20 PER CENT. K-L WITH CAUSTIC SODA.

The 20 per cent. K-L with caustic soda, at the rate of 1 pound to 12 gallons, was used on a few nursery apple trees with excellent results. The spraying was done November 21. When examined January 9 there 98 6-10 per cent. of scales dead and 1 4-10 per cent. alive or doubtful. This mixture was noticeably caustic when it touched the hands or face. Perhaps 1 pound of caustic soda in 20 gallons of K-L will be sufficient.

25 PER CENT. K-L MIXTURES.

Only one more experiment will be mentioned. This is a comparison between 25 per cent. K-L, 25 per cent. K-L with rosin soap, and 25 per cent. K-L with dry slaked magnesian lime. The application was made to badly infested pear trees November 12. In a few hours there came an unusually heavy beating rain and wind storm. The mixtures seemed to loosen the scale covering and the dashing rain washed

myriads of them, together with the spray, from the side of the trees whence the storm came. On the other side of the trees the spray adhered well with a slight difference in favor of K-L with rosin soap. These mixtures appeared to kill much quicker than the same strengths applied in December. This gives rise to the opinion that the scales had not yet sealed up their winter homes and the mixture could reach them readily. Nine days previous to the spraying a few moving young scales were noticed. Examinations were made at short intervals and the increasing effectiveness of the remedies was evident. On November 25 specimens of rough bark plastered with scales were examined and no insects which with certainty could be said to be alive, were found. There was estimated to be less than 1 per cent. which had not discolored and dried up enough to be pronounced absolutely dead. A few days later scattering live scales were found on the smooth bark from which the mixture was washed, so that the estimated efficiency of these mixtures was 95 per cent. for all trees. Since that unusually severe rain storm followed so soon after spraying, it was manifestly unjust to a fair test of the remedies to judge them by such an unusual natural disadvantage. They must stand on their merits and all of the usual severities and drawbacks of weather conditions are welcomed. This statement of the case is offered as a justification for giving these trees a second spraying December 1, using the same strengths employed before. On January 10 samples of rough bark, smooth bark and short spurs were examined with the following results:—

Pear tree sprayed with 25 per cent. K-L made with limoid had 99·8-10 per cent. scales dead and 2-10 per cent. alive or doubtful.

Pear tree sprayed with 25 per cent. K-L made with limoid had 99·8-10 per cent. scales dead and 2-10 per cent. alive or doubtful.

Pear tree sprayed with 25 per cent. K-L made with dry slaked lime had 99·8-10 per cent. scales dead, 2-10 per cent. alive or doubtful.

Of the insects alive or doubtful only a single one showed real evidence of being alive, the others were badly discolored.

ADVANTAGES OF K-L MIXTURES.

They are easily made without any heating of materials; are moderate in cost; are not disagreeable to handle except when caustic soda is used; have no unpleasant odor; can be sprayed through the finest kind of nozzle without clogging if foreign matter is kept out; do not necessarily require straining; are effective and adhere well; can be applied at any time during the year; are absolutely uniform in percentage of kerosene; can be used against all sucking insects, and we hope against biting insects and fungous diseases also, all in one application; and can be distinctly seen on the trees so a careless nozzleman can not hide a poor job. Another special advantage is the spreading of the spray on the bark like the spreading of oil on paper. This is especially desirable on fuzzy twigs like those of the apple.

SUGGESTIONS AND CONCLUSIONS.

In only a few of the recent tests has the killing effect of the mixtures become exhausted so the final determination of results can be made. That some of them are at least as reliable as the lime-sulphur-salt wash there is no reasonable doubt. From the results just given the following can be suggested for trial during the dormant season.

Twenty per cent. or 25 per cent. K-L-B (kerosene-lime-Bordeaux) especially on peach trees to get the effect of the Bordeaux mixture against leaf curl and brown rot, and on apple where the scab and bitter or black rot are prevalent; 20 per cent. or 25 per cent. K-L with or without rosin soap or the same strength with salt 1 pound to 5 gallons; or 20 per cent. K-L with caustic soda 1 pound to from 12 to 20 gallons. The K-L-B is to be preferred above all other mixtures.

Crude petroleum is not at all satisfactory in making K-L and its use is not advocated.

If there are portions of the dormant period more favorable for successful treatment than other portions, it certainly seems that the very best ones are early in November and late in the spring, because then the scales are not stuck to the bark so closely as they are in the winter, and the remedies will more readily get beneath their scaly protection. Our tests have shown that early November and late spring treat-

ments are the most effective and special emphasis is hereby given to this point.

To the fruit growers who contemplate using the K-L mixtures let me say, make them according to directions, spray thoroughly, and give them a fair trial. If at any time you wish more information regarding them, please write to me and your requests will receive immediate attention.

DISCUSSION.

THE PRESIDENT: Mr. Close, you refer to that fifteen per cent. K-L. There is one point about that I do not understand. How much is that diluted?

PROF. CLOSE: Well, that, of course, depends upon the per cent. Here is the limoid, and, by the way, you will see samples of this in the Exhibition Hall below, and Mr. Watkins, who is the agent of the Charles Warner Company, the manufacturers, and through his kindness we will be able to make some of these mixtures, if you care to oversee them made. This is limoid that I refer to. This is the same that the limoid is made from. In this bottle there is a sample of the dry slacked high calcium lime; that is, it is made of lime air slacked and high calcium lime.

In this bottle is a sample of the twenty per cent. K-L mixture, and in this other one that I now have in my hand we have the ordinary Bordeaux mixture. Now, when we use the Bordeaux mixture in making K-L-B, we have this material. This is the sample, and you can see the difference in color. The different solutions can usually be detected by the difference in color, so that if you are familiar with them they are readily detected one from the other. This next one, which I will pass around with the rest and ask you to examine so that all may see them, contains a sample of the twenty per cent. K-L, made with dry slacked magnesium lime, and here we have the twenty per cent. mixture made with air slacked lime.

A MEMBER: Prof. Close, how do you account for the discrepancy which seems to exist between the results obtained with the fifteen per cent. solution and the twenty per cent. mixture?

PROF. CLOSE: There is a discrepancy between the results with the fifteen per cent. and the twenty per cent. mixture, but I know of no explanation for it. The results given were somewhat better where the rosin soap was not used, and it must also be remembered that this spraying was done when the scale was in a condition which makes it the hardest to kill.

One of the best points in favor of this mixture is its ability to spread; the lime, sulphur and salt wash apparently does not spread. When it strikes the tree it seems to stay right there. The K-L mixture will spread on the bark. The oil spreads on the portion surrounding where it strikes, and that is an especially desirable point. It is true, in many cases at least, that the lime, sulphur and salt, and the water, covers up these places that I refer to without penetrating into them, but with this remedy we get penetration into these places, so that it takes a more effective mixture on that account.

I have with me a few of the bulletins that were issued August 26th, 1904. During the past month, during January, I presume I have had at least three hundred requests for this bulletin. I have also a circular-letter of directions that was printed. That is a letter which is being sent out with the bulletin. I have a few of these here, and we can get some more from Mr. Watkins if there are not enough. If any of you care for these I would be glad to have you take them. If we haven't enough to go around, why please write to the Experiment Station at Newark, Delaware, addressing the request either to me, personally, or to the Experiment Station, and we will cheerfully send them out.

At this point Vice-President Hubbard was called to the chair.

Experiences of Connecticut Growers in Spraying for Scale.

THE VICE PRESIDENT: It would be interesting to follow this very instructive paper and these statements and explanations which have been made by Prof. Close, with more detailed discussion, but the scarcity of time forbids. We must pass on to the next subject upon our program.

Therefore, without following the matter up any further we will go on with our program. The next speakers have been chosen from among the leading growers of our State, and they will tell you something about their experiences in spraying for scale in Connecticut. They have all of them been fighting the scale by spraying, and they are going to tell us some of the practical results of their experiences. I trust every one of them will respond. I am going to ask them to come forward and occupy the stage, and to be exceedingly brief in their remarks.

The first name is that of Mr. J. N. Barnes, Wallingford. Will he please come forward onto the platform where everybody can see and hear him?

MR. BARNES: Mr. President, may I be excused? The time is so short.

THE VICE PRESIDENT: You can not be excused, because you have done more of this work than anybody else in Connecticut. I think Mr. Barnes ought to tell us his story. I do not feel at liberty to excuse him.

MR. BARNES: Very well, then, Mr. President and brother fruit growers, I will do the best I can. I have no specially prepared line of talk for you this morning, and it will take only a moment or two for me to say what I have got to say.

I would say that last spring we did very little spraying for ourselves. Our outfit worked mostly for the benefit of neighbors and friends, who were having some trouble and wanted a little help. So that I can say very little about what we did for ourselves last spring. I would say, however, while I am talking about last spring's work, this, in regard to a neighbor's pear trees. While I did not know that they had any San José scale on them, they had looked very badly for two or three years. From presence of Pear Psylla and during the season last summer I noticed that these pear trees were in very fine condition. I judged it was due to the effect of the lime, sulphur and salt spraying which was applied to them at the same time that the peach trees were sprayed.

Now, in regard to last fall's work, we found the necessity of spraying an orchard containing trees that are about fifteen years old. We previously did not suppose there was any San José scale on them. It is an orchard which is

largely planted with apple, as well as with peach trees, the apple trees being all the way from one year to fifteen years old. We took November for this job, what good weather we could get, and the orchard being some distance away from our central place of business, we moved our men and appliances to the orchard and stayed there. I might say that some of the apple trees, particularly, and some of the peach trees were very large, they being trees that had borne a great many crops of fruit. I was rather surprised, on examining carefully, to find much scale on these old trees. I was there in that orchard some days ago and looked it over, and was rather inclined to feel that the spraying at this time was not showing on these trees as much as it ought to. I do not know just what the result will be, whether we have been successful in killing the scale or not. I shall not be able to tell definitely about that without some further examination.

Now, I would like to emphasize one thing in particular in this spraying work, which I presume we are all of us coming face to face with, and that is the desirability of being *very thorough* with the work. Throwing the spray from one direction upon the tree I think is not sufficient. It will take two different sprayings to finish up the trees. Try to get a day when there is sufficient wind to drive the spray in a different direction from the first time, going over the trees. I found last fall the desirability of using caps with very fine openings for spraying nozzles, also very much longer lengths of hose than we ever used before, and that gave us plenty of room to get around, and did not bother the men so much by getting the spray in their eyes.

Now, at the present time we are up against the problem of spraying an apple orchard of large trees. The trees are many of them large. I think there is no large amount of scale in it, but there is some, and I feel that this operation is the most severe one of its kind that has ever confronted us. I have a man that is specially fitting those trees for the job. We are removing the rough bark, that can be broken easily without injury to the trees, and thinning out the limbs where necessary so as to get into the interior of the trees easily with the spray.

Many of us, doubtless, have been hoping that we would not have a job of spraying on hand, but the probability is that we have got the scale, that it is there, and that we do not know it. That, if true, makes it necessary for us to be very watchful and to learn of its presence as soon as possible. Now, when you go to spray, and it is not such an awful job after all when you once know how to do it, do the job thoroughly, no matter how large your orchard is. Last fall we sprayed some fifty acres, more or less, and it cost us something like three hundred dollars to do it. If the job is successful, we will not regret that amount of money, because we get results, we believe, aside from the killing of the scale, that makes the spraying of value.

MR. IVES: Does that three hundred dollars include the spraying for the scale?

MR. BARNES: That includes the labor and the cost of the material.

MR. IVES: Just one spraying?

MR. BARNES: Yes.

THE VICE PRESIDENT: Mr. J. H. Hale. Is Mr. Hale in the room?

MR. J. H. HALE: Mr. President, and gentlemen, I did not know that I was to be called on. I will not waste any of the time by going up there and trying to make a speech now, and it is not necessary for me to do it either, because the question of spraying has been pretty well covered by Mr. Barnes. I believe we have the scale with us everywhere in the State, whether we have discovered it or not. I believe from experience that the lime, sulphur and salt spray at the present time is the cheapest and best remedy available, because it is not only valuable for killing the scale, but it is also valuable as a fungicide, and, as we all know, is of great benefit to the trees in other ways. Further than that, Mr. President, we have had a whole bunch of professors here to tell us about new things that we wanted to know, but the professors themselves do not know everything. They tell a story down in Maine of one of these professors up there, and one day there was a fellow who got up and asked him, "Professor, if you know so all-fired much, will you tell me whether digging

clams is farming or fishing?" (laughter). Some of the things that they know so all fired much about, in a year or two we shall know whether what they have been telling us about killing the scale is worth our powder, or whether they have been filling us up with something that they *thought* they knew all about (laughter). Yet we need them in the work just the same.

Up to the present time the lime, sulphur and salt mixture, boiled about as long as has been indicated here (thirty minutes is about enough), is just the right thing I think. In mixing up the sulphur, so as to make a paste, I think is all unnecessary. If you can turn your lime into the boiling water, and then dump the sulphur into it, so you will not burn the life out of that sulphur, or melt it down, and then in the course of about twenty-five minutes boil it hard, you will get a mixture that will do some good.

It is not such a big job to spray, as Brother Barnes states, if you know how to go at it. Of course, it costs a good deal for a pump and the spraying nozzles and for lines of hose, and for everything that is necessary. Of course, it costs considerable to start with, but it is worth all it costs, and it is something you can not afford to neglect. If you have got any number of trees it does not cost so very much per tree. I think somebody said here that last year it cost something like six cents a tree, but last year our cost was down to about three and a half cents. And that was right here in Connecticut. In Georgia, where the tree grows larger, the cost was something less than two cents per tree. Of course, you know I am speaking about peach trees. I do not know very much about anything else.

Now, Mr. President, Brother Barnes has given us a good talk on the conditions right here in Connecticut, which is the thing we more especially want to know about, and I don't know as there is anything more for me to say. But you have got to spray if you expect to raise peaches in Connecticut.

THE VICE PRESIDENT: Mr. Hopson of Wallingford. Will Mr. G. A. Hopson come forward?

MR. HOPSON: The Highland Fruit Company, which I represent, is located in the easterly part of Wallingford, and

has about fifty acres in orchard, consisting of peach, with a few pear and plum trees.

In the summer of 1902, many of our plum trees did not appear to be in a very flourishing condition. A close examination showed the presence of San José scale. At that time the trees were in full foliage, and the fruit fully half grown, a good set of fruit being upon the trees. What to do at that season of the year was hard to tell, but realizing that the scale would soon kill the trees, we resolved to employ the easiest method at hand, and thoroughly bathe the trees with kerosene oil, using in the application a whisk broom, a paint brush and a bunch of rags. We thoroughly painted and rubbed the trunks and the larger branches with the brush and rags, using the broom to apply it nearer the ends of the branches, much of it, of course, falling upon the foliage.

The experiment resulted in killing the scale upon the branches where, in the application, the oil reached, and in no apparent injury to the foliage or fruit, which in many cases was soaked by the application, so much so that when the fruit was harvested it smelled and tasted of the kerosene. These plum trees are located at one side of the peach orchard, and surrounded on three sides by them.

The spring of 1903 showed that the scale had spread to the surrounding peach trees to a limited extent. Not having any other means at our command, and one of our company having used crude petroleum in his own orchard quite successfully, and owning a "Kerowater" pump, we purchased and used two barrels of crude petroleum. The results were fairly satisfactory, there being no apparent injury to the trees.

In the spring of 1904 a careful examination of our trees showed the presence of the scale in several different localities in our orchard. No section was badly infested, but enough was found to awaken us to the fact that something must be done for its extermination.

We accordingly made plans to spray the entire orchard of nine thousand trees with the lime-sulphur wash. One of our company owned a Safety farm engine and boiler of five horse power, which we hired for cooking the mixture. This

was set up at a shed near the center of the orchard, a spring about fifty rods distant was cleaned out, and the water as needed was hauled to the central plant in open barrels on a low down, broad tired wagon, bailed from the spring into the barrels with a pail, and then bailed from the wagon into the cooking hogsheads as needed. Our engine was left on the rear end of a wagon as hauled to the orchard, a piece of rubber hose was attached to the steam valve, and a light crowbar fastened to the other end as a weight to keep the end of the hose near the bottom of the cooking hogshead, and to prevent the power of the steam from forcing the end of the hose out of the liquid. It was also a convenience in lifting the hose from one hogshead to another.

For cooking, two 125 gal. molasses hogsheads were used. The wash was made by putting sixty pounds of lime in the bottom of the hogshead, pouring on water enough to cover, then inserting the end of the hose and letting in the live steam. This hastened the slaking of the lime and saved a few minutes' time in the boiling process.

A third barrel of fifty gallon capacity, filled with water, was kept standing near, into which, when not in use in the boiling hogshead, the hose was thrust, which gave us continually a barrel of hot water for pouring on the lime when slaking. I consider this as quite important, and that it contributed not a little in the saving of time, and also to the more thorough slaking of the lime.

Now to go back. As the lime began to slake and to soften, forty-five pounds of sublimed flowers of sulphur were added. This was thoroughly mixed and stirred with the lime, as it slaked, with a hoe. As the lime became slaked and the sulphur dissolved, an occasional pail of water was added. This to prevent what in our experience showed might be a too rapid boiling of the mixture, as with fifty to sixty pounds pressure we could easily force the stuff over the side of the hogshead.

During the process of boiling, the hogsheads were covered with sacking, which retained the heat, and stopped considerable escape of steam. The boiling process was kept up on an average of about forty-five minutes, water being added

during this time, so that with the boiling finished the hogshead was full, or contained quantity enough to fill three mounted barrels containing the spray pump.

A few minutes before the cooking of one hogshead was finished, the lime for the next batch was weighed out and put in the other hogshead, and the slaking begun by adding warm water from the small barrel before mentioned, so that no time was lost. By working in this manner we kept two pumps continually at work, and had a hogshead full ahead at night, which we found retained heat enough to apply easily in the morning. The material was dipped with galvanized pails from the hogshead to the pump, being strained through a strainer which came with the outfit. This worked in a satisfactory manner, and I do not believe our two pumps were delayed altogether one-half hour during the season's work. No salt whatever was used in making the mixture. Our outfit for its application consisted of two Hardie No. 6 spray pumps, mounted through the side of the barrel, and fitted each with two twenty-five foot lengths of hose, and an eight foot bamboo extension rod, with two Vermorel nozzles on each. These barrels were mounted upon a boat or a sled made of three by six or eight inch scantling for runners, with cross planks spiked on, one end of the runners rounded, with an arrangement for hitching on the eveners. Upon this the barrels as mounted at the factory were fastened. We fastened one with the barrel lengthwise of the sled and the handle of the pump at the side, another with the barrel crosswise of the sled, bringing the handle in the rear, which is much more convenient, and decidedly the better way for mounting.

A common stone boat of plank might serve in an orchard free from stone, but in an orchard covered with many good sized rolling stone, a sled with runners will prove much better.

These outfits were drawn by two horses, a man driving who worked the pump, and two men following who handled the nozzles. Our spraying was all done with the wind. With a northerly wind blowing we began at the south side of the orchard, driving toward the north, when the wind

drove the spray away from the horses and the operators, and fell directly and forcibly upon the trees.

We continued working in this direction until a favorable wind sprang up, when we would reverse our operation and finish the trees. In spraying our orchard in this manner we of course drove up hill and down, lengthwise and crosswise, but there seemed to be no lack of willingness on the part of the wind to change as often as we desired as the work progressed. We had no difficulty in conducting our operations after this manner. The advantage in this is, that a great saving in material is made over an attempt to spray in the teeth of the wind, and also saving the workmen from being covered with the caustic material. We did not cover our horses, and none of us used rubber or oilcloth suits, simply our oldest clothes, and some of us wearing cloth gloves on our hands. None of us suffered by getting an occasional squirt in the ear, or by having our hands wet with the mixture. The only inconvenience I suffered was in stirring the mixture while cooking, caused by the escaping steam into my face. This was not serious, however.

I have endeavored to give as briefly as possible a correct outline of the work as actually done in our orchard. We tried different ways of cooking and handling, but without being able to give any reason for it other than that the quantities we settled upon seemed to work rightly together with but a little loss in sediment, and that the amount of cooking, though occupying much less time than many others used, seemed to develop a proper color and consistency, in our ignorance we adopted them.

I believe, without being able to give any reason for it, that the mixture can be boiled too hard and too long; still it would seem to me, from what I have seen of the work of others, that the lack of proper and sufficient boiling, and I might add stirring, was the leading factor in unsuccessful preparation. Whatever may have been our success and our failures, I had the satisfaction of being told by one or two Experiment Station workers that my methods in mixing, boiling, and application were the most practical, the most thorough, and the most economical they had seen, and as to the success of the work I have the added satisfaction of being

told by a professor, after a somewhat thorough inspection of the orchard in October, that while he could not swear there was not a live scale in the orchard, he would say that he had not found one. We sprayed nine thousand trees, five, six and seven years old, at an expense, including total cost of pumps, rental of engine, charging full day wages for men, and horses, including all materials used, of four and nine-tenths cents per tree.

THE VICE PRESIDENT: Mr. Charles E. Lyman of Middlefield will now please come forward and give us the benefit of his experience.

MR. LYMAN: I only have a few words to say, Mr. President.

THE VICE PRESIDENT: Well, we do not want to lose a single word, and I think you had better come forward.

MR. LYMAN: Something over a year ago, along in September, I found that we were badly infested with the scale. It had not come to my notice before. Some of our trees were so badly infested that they were gone by. They were so badly infested that there was quite a portion of them worthless, and many of them died before the next spring. I found upon consulting with the Experiment Station people, with Prof. Britton and others, that the lime, sulphur and salt, or lime and sulphur preparation, was the best thing to use, and so we prepared ourselves for doing the job in the early spring. I will not go into detail, because your time is valuable, and what has already been told by the previous speakers would cover our experience somewhat; but we used the salt in our mixture in all cases. I think our job was a more expensive job, or at least it proved so, than the work which was done by Mr. Hale, and by Mr. Hopson of the Highland Orchard Company, but the results were very gratifying. I saw no indication of the scale in the past season, and I imagine it will not be necessary to spray again this year. At least I hope not. The expense was quite heavy. I presume on the average, on a good sized peach tree, say from six to seven years old, it would average ten cents to the tree. I thought we were making a thorough job of it, and to do that perhaps we used more material than was absolutely necessary. You can save on your second job over

what you can on the first work. I agree pretty well with Mr. Barnes that it is best to do a thorough job the first time.

Our experience is that it is not such a great job to do if you get ready for it. You must be prepared for it, and you must have plenty of help, and the right kind of help, look after it closely, and the materials must be mixed up right. That is very necessary, because a little carelessness will spoil the whole job. I will not take any more of your time. (Applause.)

At the conclusion of Mr. Lyman's remarks Vice-President Hubbard, who had presided during the discussion of the Scale problem, retired and President Gulley resumed the chair.

THE PRESIDENT: We have a number of other names on the list that have not been called upon yet, but as we have another exercise for this forenoon, and the time is passing so rapidly, it has been thought best to defer the remainder of this discussion until some other time, perhaps this afternoon.

While I think of it I wish to refer to the membership matter, and to say that the invitation is out to you all to become members of this society, and we hope that not one of those present will leave for home until they have joined the society. You have received a full dollar's worth for your membership during the last year, and if you do not get the worth of your money in the year to come we would like to know why. We want to make the society a great success and increase the membership to a thousand members. And we hope that you will join with us. Mr. Gilbert, over at the membership desk in the corner, is waiting to receive your application. We took one hundred and seventy memberships yesterday, and we hope to take as many more to-day. That is all.

MR. HALE: I am sure that the audience is so much interested in this Scale subject that at some time they ought to have an opportunity to question these professors who have addressed us, and I would suggest that the matter be taken up further the first thing at this afternoon's session. Call to order on time, Mr. President, and let us discuss it then.

MR. INNIS: Mr. President, these papers are certainly very valuable, and I think it would be a very good thing if they could be placed in the hands of the fruit growers prior to the time when we want to commence the spring spraying. It seems to me if that could be done the points contained in the various papers would be of very great help. Our annual report, as the Secretary has already said, may not be out before the first of April, or later, and that is too late to be of much value to us before we have to commence the spring spraying with the lime and sulphur mixture. Would it not be a good plan to have a sufficient number of copies of this part of the proceedings printed to circulate among the members of the Pomological Society? Of course, I know that this is an expense that perhaps we do not want to go to, but, after all, will it not pay in the end?

THE PRESIDENT: There is no question but that it can be done.

PROF. BRITTON: Mr. President, if this report is printed at some place where they have a complete plant, it is simply a question of setting up the matter with a linotype machine. Many times we have this linotype matter struck off in the same way as the proof would be, and probably a sufficient number of copies to mail around to the members would not cost more than five or six dollars. It seems to me it would be a valuable thing to the fruit growers if that paper could be circulated before the spring spraying comes on, and would hardly require any extra expense, as it could be put up in some cheap form.

MR. IVES: I am heartily in favor of the idea, for I am convinced that there may be some very valuable information, not only in these addresses, but in what is to come later, and if it can be done I would be in favor of having it condensed all in one. That is, if something could be compiled just to give the gist of it, so we can know just what to do, and thus get the benefit of all of the proceedings of this part of the session, devoted to the discussion of the treatment of the San José scale.

A motion was then made that the papers relating to "Spraying for the San José Scale" be printed at the earliest

possible date for distribution among the members of the Society.

SECRETARY MILES: Mr. President, just a word before that motion is put. I was not on the stage when that motion was made, but I take it it was in reference to publishing a portion of the proceedings in advance of the full report. It has occurred to me that it might be possible to condense the discussion and papers on this San José scale topic that have been given and publish them at once, without waiting for the full yearly report to come out. If that would be agreeable to the society I am sure that the officers will make every endeavor to get it out promptly.

The motion, having been duly seconded, was put to vote and passed.

THE PRESIDENT: The next item on our program is a little series of five minute talks by the students of the Connecticut Agricultural College.

We want you to know that we have some of our boys up there who have been paying special attention to horticultural subjects. We have been trying to induce you to come up to Storrs and see what we are doing, but as you will not come, we have brought some of the boys down here to show you a little of what the College work is. The boys are not going to tell you anything new, but simply show you a little what we are trying to do. We try to give them all the knowledge and information we have about general principles, and leave it to them to carry out the practice in the future. Our class work is carried on in sections in different ways. The boys that I have here are those that have given more or less attention to horticulture, and as each one will take but a few minutes, I do not think it will tire you out. Each will give a very short talk or paper. The first being by Mr. S. B. Hollister on "Fungicides and Insecticides."

(This paper as well as others in the series will be found among the Miscellaneous Papers and Reports, on page 238.)

THE PRESIDENT: That completes our program for the forenoon. The meeting will now stand adjourned until half-past one.

AFTERNOON SESSION.

It was nearly two o'clock when the members reassembled for the closing session of the meeting. A very full program remained to be carried out, but before taking up the regular order President Gulley called for the reports of the several special committees.

PRESIDENT GULLEY: We have two or three committee reports to come in, some of them at least are ready, and I will call first on the committee on fruit exhibits to make their report.

MR. T. E. CROSS: Mr. President, the committee did not think it necessary to occupy very much of your time, and their report will be very brief. We examined the tables of fruit, in the Exhibition Hall, and found something like 40 varieties. More or less of them were choice, and some of them were fair to middling, and some of them were quite middling. As the society premium list restricted to about twenty varieties for awards of money premiums, the committee did not think themselves at liberty to exceed that number, and therefore they only awarded the first and second prizes to some twenty varieties. While some of the others were worthy of prizes, still the committee did not feel empowered to award them. Further than that, as the society only offered first premium in money, the committee in some instances, where there were several different entries of the same variety, took the liberty to award a second and third premium, and though that was not to be a money premium, still it signified the comparative quality of the fruit exhibited. I think the exhibitors as well as the visitors to this meeting, by carefully examining the fruit on the table, can learn a good deal in the line of improving the quality of their apples, and while, from the standpoint of the society, it is desirable to have as large a collection and to get as many exhibits of fruits as possible, still at the same

time I am satisfied that some people who brought exhibits of fruit to this meeting will either do one thing or the other next year; they will try to bring better apples, or else they have seen such a vast difference in the quality of their apples, as compared with those of others, that they will feel they had better keep their apples at home. I do not say this to discourage people from exhibiting, but rather to instruct them in growing a better quality of fruit. There are only about 40 of the different varieties here, and there are two or three or four hundred varieties in existence, and out of that number there are at least two hundred varieties that are not here, but that might be produced in this state. But still, out of that three or four hundred varieties, you can take a dozen that will pay more money than any in the lists, and while these odd varieties are desirable from a standpoint of novelty, at the same time from a money standpoint I do not believe it is advisable to plant those kinds, and I believe the man that plants those different varieties will in the end lose rather than gain by the venture. If growers will confine themselves to the growing of Baldwin and Spy apples, and such other varieties of fruits as are known to grow to the best advantage in their particular locality, their pocketbooks will be far better filled from the sale of those fruits than if they plant a large number of varieties.

I do not know as it is necessary for me to elaborate on this report. Whether my colleague has anything to offer, I don't know. We were certainly unanimous in awarding the prizes, and while some of the exhibitors may look their fruit over and wonder why they did not get first prize, if they will take their individual specimens and compare them with the others that did get the first prize, they will very easily see why they failed to receive it.

(The complete report and awards of prizes will be found on page 220.)

President Gulley next called for the report of the committee on Implement exhibit.

MR. N. S. PLATT: Mr. President, we wrote out our report and passed it over to the secretary, so that the names of the

exhibitors of the machinery are all on that paper, and I cannot undertake to give them to you. The exhibit this year was notable, however, for quite a large number of gasoline engines. I suppose to show to the people who spray that it might be a good power for use instead of hand power on the pump. There were five or six different makes of gasoline engines, and one engine and pump combined right in one piece. There was one sprayer—the Niagara gas sprayer, with a tank containing the liquid, and another strong tank connected with it with compressed gas in it, which supplies the power. A single tank of gas was supposed to force out 800 gallons of spraying liquid. There were samples shown of Limoid, a new preparation of lime to be used with kerosene in spraying for the scale. There was the usual display of hand pumps and barrel pumps for spraying. I am happy to see that the pump makers seem to vie with each other in trying to make their pumps perfect and durable, and simple. I remember when we used our first Bordeaux mixture, there was not any kind of a pump made for handling it, and we had to take an old boiler and fix it up for it. I have one of those now made in those days, a common boiler fixed up to go on the shoulders; it would do very well to spray low vines and plants, but was not well adapted to large trees.

Taken altogether the exhibit is the best ever shown at a meeting of this Society, as well as the largest. It deserves your careful study, as much can be learned from such displays as this.

We cannot report much further than to submit a list of the exhibits. No awards were intended to be made and no judging as to merits, so far as I know.

(The complete list of exhibitors will be found on page 222.)

MR. J. H. HALE: Having recently learned within an hour or so of the very serious illness of Mr. Merriman, formerly president of this Society, I would like to offer a resolution at this time.

Whereas, We learn with deep regret of the serious illness of Mr. J. H. Merriman, former President of this Society, therefore be it

Resolved, That we extend to Mr. Merriman and his family our most heartfelt sympathy. We rejoice with him in good works well done in the past, and wish for him a speedy recovery to good health and many years of future usefulness to himself and this Society.

MR. HALE: We all know in the early days of the organization of this Society, when a dozen or more interested fruit growers met in the state capitol, and organized first a peach growers' association, which in a short time was merged into the State Pomological Society, Mr. Merriman was one of the original members of this association, and an active worker from the very start, and after a few years he was made president of the Society and served us ably in that position. We miss him here at this meeting; we all know his keen Yankee wit and ability to analyze things, which would come out in some simple question that got right at the heart of the matter, and he has been wonderfully helpful to us all by his personal association with us and by the ideas he has advanced, and the opportunities he has given us of assisting his own work and the work of his friends over in the Southington peach section. I certainly feel confident this association will be glad to extend its sympathy to Brother Merriman at this time.

14 The resolution was seconded and passed unanimously.

The following resolutions concerning the Connecticut Agricultural College were introduced by Standcliff Hale:

Resolved (1), That the Connecticut Pomological Society, in annual meeting assembled, cordially endorses the work and management of the Connecticut Agricultural College, believing that it is actively advancing the scientific and practical interests of farmers and fruit growers.

Resolved (2), That this Society, therefore, heartily favors the erection of the new dormitory for sixty-six men, proposed by the Board of Trustees, for relieving the present overcrowded condition and for accommodating the new students who desire to enter the college.

Resolved (3), That the Secretary of this Society be instructed to send, as soon as possible, a copy of these resolutions to both the Senate Chairman and the House Chairman of the Committee on Appropriations of the present General

Assembly, together with the respectful request that the said Committee report favorably on the appropriation required for the construction of this new building.

Resolved (4), That the Secretary also give a copy of these resolutions to the press.

The resolutions were duly seconded and unanimously passed by the Society.

SECRETARY MILES: I wish to refer to a matter which I think has not been brought up yet in our meeting. On the program for this annual meeting, most of you probably noticed an announcement of the union meeting of the New York Fruit Growers' Association, the American Institute and Farmers' Club, and the Connecticut Pomological Society, to be held in New York City February 15-16. Since coming to this meeting I have received a program of that New York city meeting. I don't know as it is necessary to read it to you now, but such men as Prof. Bailey and Dr. Jordan and Mr. John Jeacinn, and also President Gulley and Mr. Hale of our own society are to take part in this meeting, and we have been invited to participate in it. If one hundred of our members will signify their intention of going, we can get reduced railroad fares. The railroads' arrangements at present are only for New York State points, but if one hundred can be secured to attend from Connecticut, the rates will be the usual half fare returning, and I hope many of you will see fit to go.

MR. T. E. CROSS: Mr. President, ladies and gentlemen: A few years ago, up to within two years, the eastern New York fruit growers held their annual meeting in New York city, and I think on the occasion of two or three of those meetings several of the members of your Society were there, and I think those who were present will vouch for the statement that I make when I say we had a right royal good time. The gentleman in charge of the meeting referred to by Secretary Miles is Dr. F. M. Hexamer of the American Institute, a very genial, capable man, and they have made all possible provision for the entertainment of those who attend this meeting on February 15-16, and every individual who will take the opportunity to visit and be with us at that

time will certainly receive a royal welcome, and have a general good time, and I want to say a word about the fruit exhibitions and the premiums. Through the kindness and liberality of the American Institute, they have offered a very nice premium list; for instance, one is for the best ten varieties of apples, \$10.00, and that is a premium worth striving for, and I hope some of your exhibitors, if they have fruit that is suitable to be taken there, will make it a point to select their very best specimens. They can get a copy of these premium lists, and, if they can't go, send their fruit there, and it will be put on the tables in a proper manner, and they certainly will get just as good a showing for the first and second prizes as their fruit merits. As a member of the New York State association, I extend to every member of this association a cordial invitation to be present at this union meeting.

ELECTION OF OFFICERS.

The time having arrived, according to the order of exercises, for the election of officers, President Gulley called for the report of the Committee on Nominations.

Mr. L. C. Root, chairman of that committee, then submitted the following list of nominations for the various officers:—

For President—J. C. Eddy, of Simsbury.

Vice-President—J. H. Putnam, of Litchfield.

Secretary—H. C. C. Miles, of Milford.

Treasurer—Orrin Gilbert, of Middletown.

County Vice-Presidents:

Hartford—A. C. Innis, Berlin.

New Haven—John R. Barnes,, Yalesville.

Fairfield—Stephen Hoyt, New Canaan.

Litchfield—Chas. L. Gold, West Cornwall.

Middlesex—Chas. E. Lyman, Middlefield.

New London—W. S. Thomas, Groton.

Windham—H. B. Buell, Eastford.

Tolland—Andrew Kingsbury, Coventry.

On motion of Mr. Butler, it was voted unanimously to accept the report of the committee and instruct the Secretary to cast one ballot for the list of officers as presented by the Committee.

Secretary Miles then cast one ballot for the entire list, and the following were declared duly elected for the ensuing term of one year:

President, J. C. Eddy of Simsbury; Vice-President, J. H. Putnam of Litchfield, Secretary, H. C. C. Miles of Milford; Treasurer, Orrin Gilbert of Middletown.

County Vice-Presidents—*Hartford*, A. C. Innis, Berlin; *New Haven*, John R. Barnes, Yalesville; *Fairfield*, Stephen Hoyt, New Canaan; *Litchfield*, Chas. L. Gold, West Cornwall; *Middlesex*, Chas. E. Lyman, Middlefield; *New London*, W. S. Thomas, Groton; *Windham*, H. B. Buell, Eastford; *Tolland*, Andrew Kingsbury, Coventry.

President-elect J. C. Eddy of Simsbury then came forward to the platform, and President Gulley placing the badge of his office on him, introduced the new president to the audience.

PRESIDENT J. C. EDDY: Mr. Chairman and members of the Society: Perhaps quite a good many of you understand that this is entirely against my wishes. I have done the best I could to keep out of it, but, notwithstanding, you have got me into trouble. However, I will try the best I can to keep the society out of trouble during the ensuing year. I thank you. That is all I have to say at this time, and we will go on with the work of this session, and I will ask Prof. Gulley to continue to preside.

Prof. Gulley resumed the chair.

MR. N. S. PLATT: Your nominating committee desired themselves, and they thought that you would have the same desire, to thank the retiring officers of the society for the great interest they have shown and for their services to the Society, and particularly we wished to express our thanks to the retiring treasurer, Mr. Moore, who has filled the office capably and with great satisfaction to us from the early days of the organization until now, some 12 years. Mr. Moore's

health, we are sorry to say, is not of the best, and it requires him to relinquish the duties of the treasurer's office, and I wish to move that this Society offer Mr. Moore a vote of thanks for this long service of his as treasurer of the Pomological Society.

Seconded and passed unanimously.

MR. HARVEY JEWELL: If it is in order I would like to offer a resolution at this time, which is as follows:

Resolved, That this Society discountenances all forms of gambling and immoral shows in connection with the agricultural fairs in this state; and we hereby instruct the officers of this Society not to allow our annual fruit exhibition to be held in connection with any agricultural fair the coming season, the management of which will allow at their fair any of these objectionable features; and further resolved that we heartily endorse any legislation tending to clean management of the fairs in these particulars.

MR. JEWELL: Many of you are acquainted more or less with the conditions existing at some of our fairs, to which this resolution alludes. Many of you may know that there is a bill, or one in preparation, that will be brought before the legislature pending, to wipe out these objectionable features, and it seems to me that this society had better get up its own exhibition independently of the agricultural fairs, and so put ourselves on record for cleanliness and morality, rather than to join with these other associations which countenance these features.

MR. EDWARD KILLAM: I am glad that matter has come up. There are some of the agricultural fairs in this state that are a disgrace to the state and to the towns that hold them, and I hope we will get a unanimous vote to have it cleaned up.

MR. J. H. HALE: If that resolution passes, there is not a single fair in the state we can associate with, as we have in the past, unless you go to the Orange Fair.

A MEMBER: There is one down in Fairfield County, too.

MR. JEWELL: Better go without any exhibition of our own, rather than to go in with these immoral features.

MR. J. H. HALE: The majority of people want to go there and gamble, and have a generally good time, and you have got to go with the crowd.

MR. FAGAN: I think the resolution is not necessary. I think, gentlemen, that the present laws of the state of Connecticut are all right if they are enforced; I think there are laws enough to cover that, and if the gentlemen who favor this will go to the fairs and see that the laws already on the statute books are enforced, I think they can take care of all the gambling.

MR. HALE: There is another side to this question. If that resolution passes, we must either hold our exhibitions all alone by ourselves, where there won't be anybody come and see it, or else we must go to Orange, or this place in Fairfield County, where it is said they have clean fairs. For a number of years this Society did get up a splendid fruit exhibition, and we held two or three splendid fruit exhibitions, and nothing finer was ever done in New England. But, except the members of our association and a very few people who had business in the hall where it was held, we had a very small attendance. Within the last few years our officers have seen fit to carry our exhibition to some of the local fairs, where they furnished us the opportunity and where they furnished the crowd. We had it two years at Berlin, and there were thousands of people there last year. We had it at Rockville and there were thousands of people there, in fact, the tent was packed from morning to night, many stopping, no doubt, on their way to gambling games, or on their way back. When they were busted they came to our exhibit, and so an uplifting influence would be exerted on them. There is no use of preaching to saints, they don't need saving; it is the sinners you want to get at, and, according to some, the agricultural saints are all in this Society. Now they don't send missionaries to civilized countries—no, they send them to those foreign countries that need their influence. Why don't we send them there, and show them that there is something worth seeing in Connecticut at a fair, besides being skinned at a wheel game or some other gambling device. I believe it would be a good thing for the society; I believe

it would be a good thing for the state of Connecticut. If we as members of this Society want to go ahead and make the people of the state of Connecticut obey the laws, that is another matter; but if we are going to tie our officers up to having an independent exhibition, or else going to Orange, why, pass this resolution, but we are getting a good deal of the state's money, and they expect us to do something for the state.

MR. JEWELL: I agree with Brother Hale in some particulars. I could wish that I were Brutus, and Brutus were Anthony for a few minutes; I am not the orator that Brother Hale is, and, with all deference to his opinion, I still believe the Society should not only put itself on record, but should make an earnest effort to stimulate public sentiment in this state, so far as it goes toward clean morals in these particulars mentioned. I think that the missionary work will be done if we pass this resolution. We have been to these fairs, as Brother Hale has stated, and they were well attended for the last three years. Public interest has been aroused in the exhibitions of our Society, and I believe that we would have a far better attendance if we should hold a separate exhibition, this coming season, than we ever did before when exhibiting by ourselves. And even if we did not, supposing we were obliged to cut down the premiums for our exhibits, I believe it would be well, in the interest of morality, to put ourselves on record as indicated in this resolution, and stick for what we believe to be right, though the heavens fall, though we forfeit our state appropriation. I believe the right will win in the long run, and it is time we were helping it along. (Applause.)

Others discussed this resolution, both pro and con, and a rising vote on the question being ordered, the resolution was declared carried by a small majority.

The first address of the afternoon was by Mr. J. H. Hale on "Money-making Ideas in Fruit Packages."

Mr. Hale was greeted with applause as he took the platform and spoke as follows:—

Money Making Ideas in Fruit Packages.

By J. H. HALE, of South Glastonbury.

Mr. President, Ladies and Gentlemen: There is very little indeed to say on the subject. I am on the committee on transportation and markets and the President asked me to include a report of that in what little I had to say here to-day. As far as the committee on transportation is concerned, there was practically nothing done last year. The failure of the fruit crop in the state, owing to the climatic conditions of the winters of 1903 and 1904, made it unnecessary for your committee to look after your railroad arrangements. But to show that the arrangements for the year previous had started up the railroad, the railroad people sent me inquiries early in summer, as they did to some other members of this society, as to what the fruit prospects were in the different sections of the state, and what special arrangements they could give us that would be of advantage to the members of the fruit growers' association of the state of Connecticut, and a little later they followed it again with an offer to furnish any number of refrigerator cars in any part of the state that would be required if we would give them two weeks' notice. The question of transportation, as you know, while we here in Connecticut look at it merely as a local affair with our New York, New Haven & Hartford railroad, yet it leads further and takes in our outside shipments, and the matter is up in Congress at the present time, and it shows what influence any body of people may have when they are a mind to push matters. A few years ago, when the interstate commerce commission was unable to enforce its rulings through lack of sufficient power, they asked congress and a few shippers' associations asked congress for more power for the Commission, and they paid very little attention to it, and the same thing happened the next year, and for a number of years since 1896, congress has been asked to take up this matter. and they have turned it down. Last year, when the committee of interstate commerce in the senate and the house were asked to present certain matters, they refused to give them

any consideration, but a few shippers in the west got together a year ago, a dozen or more, and organized, and said we will hammer congress until we get this thing going, and they sent out word to every business organization in the country, and to the state granges, and the state agricultural societies, and asked them to appoint a delegate and come to a convention and talk this over. The Connecticut Pomological Society was not represented, but the Connecticut state grange was and the business men's association was. Four hundred representatives of the different organizations met in St. Louis, and there was something doing, and they talked long and loud, and got up some resolutions and sent a committee down to Washington to see the president, and you know what happened when the president sent his message to congress; there was a good deal in it about transportation, and since then they have been hustling, and a bill has been introduced in congress giving more powers to the interstate commerce commissioners, which is liable to be passed in a very short while.

Now, as to the question of money making ideas in fruit packages. There is nothing especially new in the last year excepting the idea is growing,—and the idea is worth more than the fruit package sometimes,—because it shapes conditions that make the fruit package valuable,—the idea is growing more and more that, to make money in fruit culture, we must get as directly as we can from the orchard and field to the consumer, with as few intervening handlers and dealers as possible. Any package, and I think brother Lupton made that clear yesterday, that comes from a fruit farm to the hands of any dealer through the hands of the wholesaler, which the dealer has to break up and divide its contents for the consumer, retards consumption. That has been the great trouble with the apple barrel; the people have not consumed as many apples as they want, because the package is wrong, it is too large a package. We must get family size packages for everything we handle. Here in Connecticut we use the half bushel peach basket, and except for canning purposes it is too large, and therefore the dealers peddle them out by the quart and the dozen, and the consumption is retarded.

A family that receives two or three quarts of peaches in a day think they have got all they want, but if a package could come in, holding twice as much, then all the members of the family would eat a great many more. The fruit package we have got to come to with our peaches, is something that will go right from the dealer to the family as it comes from the orchard. The one great secret of success of southern peach growing, of late years, has been that to reach the market at all they had to pack in a medium size package, four quart basket, and when it got to the market the smaller package was a little over the quart or two the family had been buying previously, but not so much as to hinder them from buying it, and so it has doubled the peach consumption in every part of the country, and that package, the "Georgia fruit carrier," as it is known commonly, has helped more than any one thing to increase the consumption of fruit in the United States. It is a package the wholesaler can ship by express, by rail, 25 or 100 miles in small quantities, and the fruit not be bruised when handled by the expressman. We need to get here in New England for our peaches, for our plums, for our apples, some package which the people will buy and carry home with them. The western New York people have doubled and created consumption in grapes by getting up a handy package that anybody could lug home as easy as they could a bundle of dry-goods, and I look to see the time when the retail stores will have stacked up, when the fruit is in season, our native apples in nice convenient packages, so that the people may get the apple eating habit, you may have it four quarts or a peck, but something less than half a bushel, that the people will take home and will buy during the apple season. Our western friends have developed the box idea because it was the best package to load in refrigerator cars, and the best package to handle. I was in Kansas City and Chicago and St. Louis, and I saw Colorado apples of good quality and good color and good style, selling in carload lots at from \$2.25 to \$2.50 a box, from five to eight hundred miles from where they were grown, and I saw New York state apples selling in the same markets from \$1.60 to \$2.00 a barrel, so you see there was prac-

tically one-third the amount of fruit selling for more money than the other. Now here is a package that a grocer can offer for sale at his store, and name practically his own price. These people that live in flats in the cities can slide a box of apples like that under the bed, but you can't slide an apple barrel there. I believe the box is coming into use, and I believe it is here already, and wherever it is for sale it is winning the market, and winning the money to the growers, providing they are putting first-class fruit in it. But there are a whole lot of people who have got an idea that because the boxes of apples are selling high, they can put any kind of fruit in them, and some of them are putting poor fruit in them; but beware of that, don't do it. Don't do that unless the fruit is of the highest class, of the highest quality, and perfect in form and free from blemish of every kind, and when you do that you can make a reputation for it. My brother from Virginia asked us why we didn't go down there and grow good apples and come up here and sell them, and I told him that within twelve miles of this hall there are thousands of acres of as fine land as there is on earth, and I also said to him, you want \$60.00 an acre for your Virginia land, and you can buy this for five and ten dollars—plenty of magnificent land that will grow just as good apples as there are in that box on the stage and just as good in quality.

The following questions were put to Mr. Hale and discussed:

MR. FLIGHT: On this transportation subject, as I understood you, you said that the railroad companies offered to put in refrigerator cars on the sidings to ship this fruit. Has the Consolidated road any refrigerator cars?

MR. HALE: The Consolidated railroad has not any refrigerator cars, and they would have to arrange with a private car line to do it, and the growers would have to pay for the private cars.

MR. FLIGHT: In asking this question, I wanted to find out if they had, because I belong to a growers' association, and we have had to make arrangements with it as to private

car lines, and I thought if we could get over that we would like to do it.

MR. HALE: There is a bill in congress to prohibit any railroad in the United States from using private car lines, private cars on their lines. They must furnish their own cars. If that bill passes under present conditions, we shall be worse off temporarily, as the Consolidated railroad has no refrigerator cars. In the transportation of peaches in the state of Connecticut, we will need one hundred refrigerator cars in the service this summer. Now the Consolidated railroad hasn't them, and if congress prohibits them from using private car lines, they have got to buy some, and if they only use them in the five or six weeks' season for peaches, and let them lie idle during the rest of the year, it is a question whether they may not tax the rent onto us for the whole 52 weeks.

Following Mr. Hale's very interesting and suggestive address, President Gulley introduced Mr. S. L. Lupton, who gave another intensely practical talk, taking for his subject, "Hints on Selling Our Fruit Crops to Better Advantage."

Hints on Selling Our Fruit Crops to Better Advantage.

By S. L. LUPTON, Winchester, Virginia.

Mr. President, ladies and gentlemen: Like most every other man in this country I have a hobby, and that hobby is fruit packages and packing. My theory is that packing fruit is a question of morals rather than a question of education. And if I was asked where to go to get the best information about packing fruit, I should say go to church. If your heart's right, you will put up an honest package; if it isn't, you won't. The matter of fruit packages, I think, in this eastern country is very little understood. I have got an object lesson here for you to-day, and an apology to make. I will give you the object lesson first, and then say what I have to say about an organization among fruit growers with

a view of getting better packages, and better methods of packing in marketing our fruit. It is a popular belief that your fellow citizen, Mr. Hale, gets rather more for his fruit than other people do. If that is true it is because of conditions and causes which you can reproduce collectively, that he has already done individually. There is no question in my mind about that. In Oregon, last year, where these apples came from, the output was 750 carloads at 600 boxes each, making 450,000 boxes of fruit for the whole state. The whole Oregon output is practically in the control of two men, the Hood river fruit growers, and the Canyon valley fruit growers' union. That fruit growers' association means something. You join it and sign a contract; you are under a heavy penalty; you can't be in to-day and out to-morrow without suffering the consequences; you are bound up hard and fast to obey the rules of the association. I have no doubt that nearly every one of you say you can't duplicate Mr. Hale's operations, because you are small growers and he is a large one. Collectively you are just as big as he is, and it is that point I want to impress upon you. In the Hood river section they have a fruit growers' union, and a majority of the fruit growers' union furnish all the packers for the whole section. No fruit grower is allowed to pack his own fruit. The packer is sent to the orchard when the season begins; he gets five cents a box for packing it. He goes from one orchard to another, and there are as many persons employed as is necessary to do the work in the proper time, and he puts his name on the package. It is possible for a dealer in New York to order a carload of apples by telegraph, and know exactly what he is getting. In fact, that is the way the apples are sold. It frequently happens that the Hood river apples are sold months in advance before the price is named, upon this condition. Generally he orders five carloads, the price to be named whenever the goods are delivered, at the market price. He buys his fruit in that way, just as a merchant buys his ham or lard. The first thing is to standardize your goods, and the next thing is to put them in the hands of the consumer in as small packages as you can conveniently handle. The fruit here before you is certainly very fine fruit, and I

was struck yesterday with the fact that you people of Connecticut seemed to think you couldn't grow such apples as were seen in these boxes, but I don't agree with you on that proposition. I think if there is any difference at all, it is largely in the way the fruit is handled. And this morning I undertook in a mild way to put up a job on some of you fruit growers, so I went down stairs and took out of the Oregon box the Spitzenberg apples which had been sent here at four dollars a box, and substituted some of your own Baldwins, and they are here before you; one box contains Baldwins and the other box contains Oregon Spitzenbergs, and there has not been a man in this audience whose attention has been called to it, but what didn't get fooled on it. I did tell Prof. Gulley and I told Mr. Hale what I had done. I had a reason for that. I knew if I fooled Prof. Gulley, when he went back to college his own boys would laugh at him, and I didn't want to put him in an embarrassing position, and I had some sympathy for Mr. Hale, but I had no scruples of conscience about fooling the ordinary Connecticut fruit grower. (Laughter.) This box here contains your Connecticut Baldwins, and this box contains a part of the Spitzenbergs and apart of the Connecticut Baldwins, and you can hardly tell the difference where the Baldwins leave off and where the Spitzenbergs begin. And the point is that these Baldwins were sent here in a barrel for a premium for the best packed barrel of fruit for market, and your committee on fruit didn't think that barrel of fruit was entitled to first premium, so really it is not the best you can do with Baldwins. Now gentlemen if that is not an effective object lesson to you people, I cannot give you one. I was interested to-day in seeing a gentleman and lady come down here and look at these apples, just a few minutes before we began our exercises, and they picked them up and examined them carefully, and were delighted with the appearance and quality of that fruit, they had never seen anything like it before, and down stairs this noon, while we were going over the fruit, a number of gentlemen came up to that box and picked up those Baldwins and looked at them and discovered the Bordeaux mixture in the blossom where they had been sprayed in Oregon. Now you can see just what you

can do on your hills of Connecticut, if you go about it right. Some years ago, in fact, I became so thoroughly impressed with the absolute necessity on the part of the farmers to organize their business in such a way as to meet the organization of other business, that that question got to be a sort of a hobby with me. Every business under the sun was being organized, everything was going into a trust, and it did seem to me that the farmers must organize or perish. I confess that conditions look a little brighter than they did even a year ago. It does seem to me that conditions are in the way which portend good things for the farmer; it does seem to me that conditions are in the way which portend that the power and unbridled license of the great business organizations of this country, which are commonly known as trusts and railroad organizations, is going to terminate, and that the time has come when they are going to be called to account, and it affords me great pleasure to say to a Connecticut audience, that I believe if there is a man in the United States to-day who can and will bring that thing about, it is the man who is in the White House. And while I agree with everything Mr. Hale has said about the effect of these resolutions upon the members of congress, and the pounding away at congress, I do also believe that the interstate commerce league might have pounded away at congress for another generation, if you hadn't had a man in the White House who took up your fight for you. Now you have been told that the farmer must paddle his own canoe; you tell your boys to paddle their own canoe. But I think that the individual who first let drop that expression from his flippant tongue must have been inspired by the same arch enemy of agriculture who planted thorns and thistles in the garden of the first agriculturist. I don't like the expression at all, "paddle your own canoe," because I believe the time has come when each individual in this country must join with each other individual to make his business a success, and I have got just a few thoughts here that I want to call your attention to on that line.

A distinguished citizen of my own town of Winchester some years ago had a dream, and he reports his dream about

as follows. He dreamed that he was dead and had gone to his reward. Having faithfully served his Satanic Majesty on earth, he was gladly welcomed in the lower region. So well had he proved his service here, that the devil offered to conduct him personally through the infernal regions, and to show him all of the interesting objects he had on view. The report goes that my friend asked his guide who were those, "that great crowd of jolly people, singing and shouting and playing cards and dancing, that you have over in this corner?" The devil said: "Those are my Episcopalians, and they are a very jolly set of people, I have no trouble with them, they are jolly and good natured; they usually want the best places, but beyond that I have no trouble with them at all." They went on a little further and my friend said, "Who are these people over here?—they are making considerable noise singing and shouting and praying." He said: "Those are my Methodists, and I tell you they are the hardest people I have to manage; I never know whether I am going to keep them or not, they slide in here and they slide back again, and I never know whether I have got 100 or a 1,000; and the crowd over in the far corner by themselves—they are my worst brethren, and are over there holding close communion." "But," said my friend, "Who is this crowd coming in now? They seem to be at home, and they are coming in here as though they knew all about this place." "Oh," said the devil, "they are my Presbyterian friends, I don't bother about them at all; it is foreordained that they are to come here when the times comes. I know I am going to get them and I don't bother them at all; the only trouble is I have to keep them from quarreling on doctrinal points." About that time my friend saw a door inside of the passage, with a heavy iron bolt, and he started to open the door, and his guide rushed up and said, "Here! don't do that, you will ruin me if you do that! I have got the farmers all in there, and if you let those farmers and fruit growers out, they are so independent that each one will want to start a hell of his own." Now, gentlemen, I don't want you to do that, and I want to tell you just a few things that have been done by farmers and fruit growers like yourselves in the way of effective organization.

Some years ago the melon business in Georgia was in a state of panic. Carload after carload of watermelons were sent to the northern market and dumped into the water because they had reached a flooded market. Those people got together and they forced freight rates down, and they got the railroads to give them daily market reports, so as to prevent the glutting of any single market, and the railroad companies to-day in the melon districts furnish the growers with daily market reports posted at four o'clock in the afternoon, so that the grower can go to each shipping station and see not only what the condition of the market is in all of the cities, but he can tell you how many cars are in transit and where they are going, so that he knows exactly what to do with his melons, and the result has been that the melon industry has taken a new lease of life and is now in a satisfactory condition. Some years ago, in Colorado, they developed a muskmelon business, but the growers got competing against each other and got shipping their melons to the same places, and the melon growers were going out of business, and they organized and placed the whole product of their section in the hands of one man, and only one man controls the Rockford melons, and they go around the world, and are entirely under the control of one man. A few years ago three farmers met at Freeport, Illinois, and this is one of the most remarkable examples of concerted effort I ever knew of, and they each agreed that they would sell off their mongrel poultry, and each agreed to keep one variety of thoroughbred poultry. Then they agreed to all three advertise in the papers, and all three were to advertise all three varieties, and whenever one got an order for the variety he didn't keep, he turned it over to the neighbor who did have that variety, and to-day, for ten miles around Freeport, you can't find anything but pure bred fowls, and Freeport, Illinois, is the largest shipping district of thoroughbred fowls in the world. The three original starters of that movement are now independently well off, one of them publishes a catalogue that costs him fifty or sixty thousand dollars to get out, and they have all made independent fortunes. Perhaps the strongest and best organization among farmers and fruit

growers is down in Virginia, and it is known as the Eastern Shore Produce Exchange. Last year their total sales were over two million dollars, and they paid ten per cent. on its stock of \$50,000.00; the next thing they did was to spend \$12,000.00 on telegrams notifying the members and farmers what the conditions of the market were; they handled 2,395 cars of Irish potatoes, 2,495 cars of sweet potatoes, and a large number of cars of strawberries, and cabbage, and various other produce of that kind, and as I said before they paid ten per cent. on their stock. That produce exchange was organized down there several years ago. It was a regular business proposition; they issued stock to the amount of \$50,000.00, and the farmers and fruit growers were invited to come forward and take stock. I have here with me a copy of the by-laws and constitution of that organization, and if any gentleman desires to see them I shall be pleased to show them to him, and explain the workings of the association to him. Before that organization started, the trucking business in that section of the state was at a standstill; a great many of the growers had given up business entirely, mostly because they did not know where to send the goods or whom to send them to. The markets were glutted, but to-day the fruit growing is in a high state of prosperity, and people all over that section are members of this organization, and the commission man has gone out of business—he is not known in that country. The Winchester Exchange handles everything that goes out from that section. A great many fruit growers and farmers seem to think that there is something about organizing among themselves that is impossible and impracticable; they do not seem to know what objects they have in view. My school-teacher used to tell me if I didn't know where I was going, I would never know when I got there, and it seems to me that is the way with the fruit growers and farmers. I do not think there is any harm in organizing to know where there is going to be a glut in the market. Supposing you have got a supply in Hartford and there is a demand in Philadelphia; is there any harm for you to know that? Supposing a gentleman comes into your orchard some Saturday afternoon, a nice looking young fellow with patent

leather shoes on, and he presents a card saying he is Mr. Catchem from Philadelphia, and is a member of the commission firm of Catchem & Spendem; is there any harm in your being able to recognize that man and saying to him: "I have heard of you, you operated in Missouri, and our fruit growers' association has been informed that you bought fruit and didn't pay for it." Is there any harm in knowing that? Suppose this Pomological Society of Connecticut wants to buy twenty thousand trees this coming spring to plant; suppose you go to a nurseryman and say, "I have got an order here for twenty thousand trees, and that is all the trees the Connecticut people are going to plant because they are all in our society, and this is a combined order for our people." How much do you suppose you would have to pay for those trees? Wouldn't your nurseryman let you have them for considerably less than 25 or 50 per cent. off? We have been doing that; we bought fifty thousand trees this last fall, and I would be ashamed to tell you how much we paid for them, because I got into trouble once for stating how much they cost, to a nurseryman, for he said they couldn't be grown for that. There is no use of talking, there is danger of overdoing the fruit business and overdoing the apple business; but it is the fellows like Hale and Goodwin who are going to overdo it, and they are going to beat out the small man, not because they can grow any better apples, but because they are going to keep posted, because they are going to standardize the goods. There is no reason why you shouldn't standardize your apples, and the small growers will have to get together, —if they don't, they will get left. I don't want any bad fruit to go to market, because that hurts the prices of good fruit; but the more good fruit you send to the market the better I will like it, and the more bad fruit you send makes it worse off for everybody. I was reading on your program the objects stated for your organization. Well, that is a good thing; but if you want a business organization, you will have to get closer together than your Pomological Society. It won't do to let every man come into your business organization and go out just as quick as he would like; you must give up some of your privileges for the common good, and you must

agree to stick by the organization, and it will make money for you, and I don't know of any place where that is needed as in a community where there is such a large number of small growers. When I was invited to come up here, I suggested to your secretary I would talk along this line about organizing yourselves for business purposes, and if you please for political purposes. Perhaps some of you gentlemen think I am treading on dangerous ground when I suggest organizing for political purposes, and you say you must keep politics out of your Pomological Society. That is the greatest mistake you ever made in your life; you want to bring politics into your pomological society, and keep it out of the legislature. You don't want any politicians in the legislature; here is the place for them right here. Now I don't mean politics that goes by the name of democratic politics or republican politics, but I mean farmers' politics and business politics; I mean the politics that will give you good schools, and give you good county officers, and give you good roads; that is the sort you want, and that is the kind we have not got in Virginia. I have got a remedy for a good many of the legislative ills that we are having trouble with to-day. A certain individual by the name of Thomas W. Lawson is writing in Everybody's Magazine and he says he has got a remedy, but I have got a remedy for the evils he speaks about, and a good many of the evils you and I suffer from. I have heard the Consolidated railroad controls your legislature; I don't know whether that is true or not, but everywhere in this United States, and especially in New England and the South, we have been engaged in restricting suffrage; we say to a certain class of people, "We don't think you ought to vote," some for one reason and some for another, and so we make various restrictions; and we say this fellow shouldn't vote because he don't own a mill, and to another he shouldn't vote because he can't read or write. I am not quarreling with that idea, but now after you have restricted your suffrage, then you ought not to stop there; then you ought to impose a tax of \$50.00 on every man in Connecticut who don't vote every time there is an election. You keep the bad man away from the polls, and the good man stays away of his own

accord, and that is wrong. Now I want to ask you one or two questions. You heard Mr. Collingwood talk about the parcels post department. Now, how long do you suppose it would be before congress would give you the parcels post, if congress knew every man was going to vote for it at the next election? You ought not to stop there, you ought not to wait until the politicians on one side nominate a bad man, and the politicians on the other side nominate a worse man, and give you your choice of either, because you are going to get left either way it goes. You want to go and help make those nominations. I was wondering when you were talking about your appropriation from the Connecticut legislature, I was wondering how many members of this society would vote for a man because he was a member of the Connecticut Pomological Society, and because he was going to stand by you, and I was wondering how many of you democrats would refuse to vote for your democratic candidate because he was not a member of your society; and because he refused to do what you wanted him to do. That is the sort of politics I am pleadng for; it is the sort of politics you ought to have in your community; it is a part of your business to do that thing. I have made this plea for organization among the farmers, because I believe, as I believe in my existence, that if you don't do it, that the young farmer is going to the wall. I don't see any young men in this gathering to-day; what has become of them? Are they on the farms, or have they gone to the cities? They ought to be on the farms, and when the resolution was up that you adopted here just a little while ago about refusing to make your exhibits at your state fairs unless these gambling propositions were done away with, I noticed every man who had anything to say on that subject was an old man.

MR. HALE: Hold on, you rascal; I am not an old man.

MR. LUPTON: I mean to say that nearly every man who favored that proposition was an old man. Now Hale has just bothered me and he has put another idea in my head. Somewhere, not long ago, I read that the proper definition of good advice was that which an old man gives to a young man when he can no longer give him a bad example. Per-

haps that is why Hale himself didn't favor that proposition. But now, gentlemen, I hope that you will take this proposition home with you, and I hope you will think about it, and I hope you people here will help us people out in Virginia, because we have all got to stand together. This country is a great big country, but it is close together, and it only takes a little while to go from here to Virginia, and we want you to stand with us, and we want you to help organize the farmers all over the country into farmers' institutes and pomological societies. We have one farmers' institute that has an attendance of 1,200 people to hear our talks, and we can do anything in the way of local legislation in that county that we take a notion to do. We didn't want any whiskey sold in that county, and there has not been a drop of whiskey sold in that county for ten years. And more than that, when we got to growing apples, the distilleries began to come around there, and some of them were moonshine distilleries, and we didn't like the smell of things around there, and we concluded we would rather let our apples rot than to make them up into bad brandy, and we got rid of all the distilleries, and the judge of the court said he was going to give a man a license whether we wanted it or not, and we told him we would run him out of the county, and he didn't give the license. There is no limit to what you can do if you get together and organize, and there is no reason why you shouldn't do it. I have come here to talk to you on the theory of man's helpfulness to man, and while you are doing this you may be sure you are going to get some financial advantage out of it in the end. I want to feel that I have said something to-day, because it is near my heart, and it is the thing in my judgment to do, and I hope I have given you something to think about, and which may possibly bear some fruit after I have gone away from you. I didn't expect to have so much to say when I came here. I suggested one subject for discussion, and was told I had better suggest something else, and when I wrote to your secretary I suggested the other subject, and he put me down for both, and it is not my fault and you must blame your secretary, and I thank you very much for giving me the oppor-

tunity to be here. I thank you more than that for giving me a patient hearing, and the opportunity to talk to you in this way, and I want to go away from here feeling that this has been a good meeting, not only for your people in Connecticut, but for our people in Virginia.

Mr. Lupton's splendid address, emphasizing the important points in fruit marketing, held the closest attention of the meeting and his practical advice made a deep impression on all present.

At the conclusion, the speaker was given a hearty vote of thanks for his valuable contributions to the program of the meeting.

MR. LUPTON: Actually, in coming into an audience of strangers, one should feel some embarrassment, but when the cordial reception that you have given my remarks is taken into account and consideration, I assure you that I appreciate it, and shall remember it always as one of the very best things that has happened to me, and I thank you most cordially and most sincerely for this token of your appreciation.

A MEMBER: I would like to ask Mr. Lupton what the difference is between the selling price of the goods and the price the grower gets?

MR. LUPTON: Five per cent. is the regular commission, that is, our association charges the grower five per cent., the same as any other commission merchant, and out of that they pay the expenses of the organization. They only pay one employe, and that is the manager, and he gets \$800.00 a year.

A MEMBER: You mean the association gets five per cent. of what the produce brings in the market?

MR. LUPTON: Yes, sir, and, better than that, more than 95 per cent. of the produce is sold on the tracks; they don't have to ship it away. If you should take potatoes to the exchange, for instance, and they are not up to the standard, the manager of the exchange won't take them, but he will tell you you will have to repack that barrel.

A MEMBER: What size boxes do you ship your apples in?

MR. LUPTON: It takes about three and three-quarter boxes

to make a barrel, less than a bushel to the box, and I expect those apples would be sold here for four dollars a box.

MR. GEO. E. BUTLER: We have listened very carefully to what Mr. Lupton has said, and I think that this Society ought to get some practical advantage out of it, and I think we ought to do something that will be of practical value to every grower. I move that the Society appoint a committee of three to confer with Mr. Lupton, and formulate some plan whereby the main features of Mr. Lupton's address on marketing may be put into practical use for the benefit of the fruit growers of Connecticut.

SECRETARY MILES: That is a good suggestion, but I would move an amendment to that, that the committee be the standing committee on transportation and markets, and then it won't be necessary to have an extra committee.

This was seconded and the motion, as amended, carried unanimously.

President-elect Eddy now took the chair and called for the next topic on the program—The Culture of Berries and Vegetables.

Mr. A. N. Farnham, the well known market gardener, opened the discussion of this subject in the following paper:

The Successful Culture of Berries and Vegetables.

By A. N. FARNHAM, New Haven.

This is a subject we can speculate upon, but to-day it is quite hard to verify in practice. We enter into it trusting and hoping for success, but we are quite apt to be disappointed at the end, at least, financially. It is quite easy to speculate upon success, but to achieve it is quite another matter.

We can select our ground, as we think, all right, plant our seeds or set our plants, and then if the elements smile upon us, we may be successful, but if not, while we have done what we could, success may not crown our efforts, but nevertheless we must do our part and await results. One of the essential things is to get good seeds and good plants to start with. One

cannot be too particular in this regard. A few dollars extra expended for seed or plants sometimes makes a vast difference with the result of the crop, whether it be abundant or almost worthless.

I have had poor seed and that that was untrue to name, and instead of the crop maturing when it should, it would run to seed or perhaps matured later, a little at a time, never giving anywhere near a full crop, thereby causing a heavy loss by my not being able to gather and sell it when prices were high and there was good demand. Had such seed been given me it would have been far better to have paid an extremely fancy price for the right seed.

Very often a day or two will make from 25 to 40 per cent. difference in the price obtained.

I have a vivid recollection of an experience of my own over twenty years ago, when I was raising large quantities of peas. I got some poor seed, and while the seedsman was very sorry and receipted the bill in full, still I lost hundreds of dollars, as they were "wild," produced but few peas, and kept blossoming all through the season, until finally I pulled them up. I presume they would have continued on the same way until December if let alone. As in this case, after using caution in buying, we sometimes *will* get fooled, but it certainly pays to try to get the best.

If we expect success, it is necessary to put our ground in the best possible condition, both as to its tilth and its fertilization; and, right here, I might say, in order to grow good paying crops we must use large quantities of fertilizers of some form, and it pays us to try to see in what forms we can best obtain it. I think in most cases it pays to use every effort to make what we can on the farm and to raise and plow under some crops for green manuring as well as to buy some chemical fertilizers.

To grow berries and vegetables profitably one must look ahead and only try to grow what he thinks he can get planted at the proper time, especially what he feels he will be able to give good care at the right time. It certainly is useless to expect to be successful and plant seed or set out plants when it is too late, or to let the crop suffer for want of culti-

vation and allow them to become overrun with weeds and their growth checked. I have seen a good many crops well started and then half ruined by not receiving the proper care. It won't do to raise a crop of grass or weeds and a crop of potatoes on the same piece of ground. There will not be enough large potatoes in the hill to be satisfactory. I repeat that a person needs to be quite careful in the acreage he starts to raise unless he is so situated that he can get extra help when needed. He must also plan for such contingencies as may arise. A wet season may cause the weeds to grow so that it requires a large amount of extra help from what would be necessary under ordinary circumstances, and if he has too much under cultivation he is pretty sure to suffer quite a considerable loss if unable to give proper care. He must also remember that the numerous pests cause quite an extra amount of labor, which must be given at just the right time. It would be useless to try to fight the striped bug, that troubles our cucumber and squash vines, after he had had a couple of days to feed upon them. I don't think you would find many vines left. The same would apply to numbers of the other pests. If after planting and caring for a crop we find we are overstocked, better just drop a piece, let it go by and sell that which is just ready and in its prime, as poor stock will lessen the sales and be unprofitable in the end.

The same applies to berries; we must not set more than we can well care for from the time of setting to the end of the picking season. If we should happen to have more than we could get picked, it would be far better to drop one field or portion of field and pick the rest regularly, so that we would not get any overripe or more partially decayed ones mixed in by some careless picker. I have seen some seasons when the price was so low and the market so poor, that I thought it better to let a field remain unpicked during the latter part of the time.

With the successful growing, the marketing is the equal partner, as it is only part of the battle to grow it, and perhaps the smaller part. While within the memory of many of us the bulk of our berries and vegetables were mostly grown in the east Atlantic states, to-day such is not the case, as they

are grown in large areas over the whole country, and we get them from much farther south than formerly and in much larger quantities and in better condition. Early peas, string beans, cucumbers, radish and many others come from Florida, and so they are followed up from the different sections until we have them grown here. While we have for many years had them from the south, still not from such remote points and not nearly so early and in such large quantities; now we get rhubarb by the carload from southern Illinois, as well as the southern grown, also a great many kinds of vegetables.

This condition of things has materially changed our markets, for, while a few years ago many of our products had their special seasons, now, with the assistance of quick transportation and refrigeration, the various vegetables can be found almost any day throughout the whole year in our large markets, and the berry season has been lengthened, in fact almost doubled, while people use fruit and vegetables more continuously; still we do not find the market with whetted appetite for the first of our products and willing to pay extra prices for them.

One thing that I never yet have understood in regard to a habit detrimental to the grower, as well as the dealer, is the careless way in which the vegetables are handled by the shopkeeper. He lets them lay in wind and sun and wilt, and then sends them out to his customers, expecting they will be satisfied with them, but I think he would find his sales would be increased if he were as particular with them as with his meats, butter, etc. I was in a large store this past season, the proprietor of which is very particular about his meats, and I observed he had a basket of cucumbers and one of summer squash that were certainly unfit for any human being to eat, and I asked him why he did not throw them out. He said he could not afford it. I told him I would give him some fresh ones in place of them, as those would simply keep any of his customers who happen to see them from ordering, as they would be afraid they would get some of them. A good many shopkeepers want to make too large profits and do not sell as many vegetables on that account as they might. I have

seen 100 per cent. demanded, but the cash stores have changed this somewhat.

I would advise the small grower to sell to the consumer direct as much as possible, as he will realize better prices and probably sell more goods and will not be at the mercy of the dealers, many of whom generally take advantage of those who are not regular and extensive growers.

Successful culture means a lot of hard work, some physical, and a whole lot of mental. I doubt if there are many businesses that require more hard work and longer hours than that of successful culture of vegetables. Be ready, be ready to plow at the proper time, be ready to plant at the proper time, be ready to hoe at the right time, be ready for market at the right time. Have your tools ready to use when wanted, and certainly your seeds at hand. Be ready to take advantage of the weather as much as possible, ready to set your plants when it looks favorable; rather before a rain if possible. Your seeds are better in the ground just before the rain than just after. I have known of some instances where there was big difference of the crop where seed was planted before the shower and then the planting completed the same day after the shower, and you could tell just where the planting was done before the shower and that afterwards, as in covering the seed after the shower they were spatted down a little too hard and the ground baked and many never got up at all. One would not think such a little thing would make the difference.

To sum it up, look up the market where you expect to sell your goods, see what it demands and what you think you know how to raise, and be ready to get it to market when the time comes—don't wait until the day after it should have gone to market to plan about getting it there. Feel your way along, and increase with your facilities for growing and selling, and try to grow the best and put it up and get it to market in the best shape possible.

Continuing this discussion, another able paper was read by A. E. Plant, a veteran strawberry grower.

The Successful Culture of Berries and Vegetables.

WITH SPECIAL REFERENCE TO THE STRAWBERRY.

By A. E. PLANT, Branford.

Mr. Chairman and Gentlemen: The successful culture of fruit and vegetables is the topic for discussion. Now, what is it to be successful? The old saying is, "Nothing succeeds like success." What one man calls success and is satisfied with, another man might say, "Oh, well, we came out fairly well, but it was hardly a success. There is another way of expressing it. If a man has paid all his bills and has a balance in his favor, he certainly is on the road to succeed. I suppose what this discussion is for is to bring out some personal experience in the growing and marketing of fruits and vegetables. I have been in the business of raising fruit and vegetables since 1865. There have been times when I thought I knew it all, and, on the other hand, there have been times when I came to the conclusion that there was something I did not know, and in fact the balance was against me. As there are several to speak on this subject, and it is impossible for one man in one paper to cover all the fruits and vegetables that we grow, I will confine my remarks to the raising and marketing of strawberries. Now there are two things that are essential to the profitable growing of strawberries—clean culture and plenty of fertilizers. I am aware the objection often raised is, it costs too much. And I have often been told, "you will never get that money back." And I admit it does look that way sometimes; but, in the end, clean culture and heavy fertilizing always pay. There is another thing that is perplexing in the growing of strawberries. We have to get new varieties, as after a few years' cropping they seem to lose their vitality and do not fruit good, and we have to put new varieties in, and the idea is to know just what varieties to use. We have small beds where we test them and that helps some, but there are some kinds that will produce hardly any fruit, no matter how much you do for them.

The greatest bearers are generally pistilate varieties and we pick out the strongest staminate varieties to set with them. We set four rows of the pistilate to one of the staminate, having two varieties that blossom nearly at the same time. We set early in Spring. Our planting is nearly all done in April, and we have set sometimes in March. We think the earlier they are set the better they do, for if they get a good start in the Spring, it helps to carry them through the dry weather we sometimes have in June. We believe in narrow matted rows. It gives the pickers more room and gives us better and firmer berries. There is one thing that I have passed, and that is the covering of beds in late fall. We use the sedge and salt hay that we have quite convenient. It pays to cover them well, especially in exposed places. In the Spring we take off the covering and stack it in small stacks around the beds and then put the cultivators going. We hoe and cultivate until the buds begin to show and then we put back the covering we took off between the rows, and it keeps the ground from getting dry and keeps the berries clean. We sometimes take off half the covering and the rest shaken all over the field and then set fire to it. I have said sometimes I would never burn another bed, as two or three weeks after burning there is very little sign of life, while those that were not burned were growing nicely; but when we came to pick the fruit the yield was nearly double on the field that was burned, and the fruit was better. I changed my mind then and said I would burn every bed I had the next season. What we burn for is to keep down the rust. If you do burn over your beds, burn them early.

Now, as regards picking and marketing. We contract with our pickers to pay them two cents per quart to those that pick the entire season, and those that pick part of the time one cent and a half per quart. Each picker has a number and that is what he or she goes by, and what they pick is credited to their number. We have one pay day after all are picked. Our principal market is Boston, but we keep one team and sometimes two in New Haven every day during the busy season.

We have a car placed on siding near the station and have nearly all day to load in. We have a wire once and sometimes twice a day from our agents in Boston, which keeps us posted on that market and often helps us determine how many to use in our home market.

That is an outline of how we cultivate and market our strawberries. Of course, like everything else, the growing of strawberries has its drawbacks. Last season our beds were badly winter-killed and in a way that was entirely new to us. The ground froze hard. Then came a heavy rain which filled all the little hollows with water. Then the water froze solid, and in the Spring we found the strawberries in these hollows nearly all dead. We estimated our loss at least four acres by that freeze. This fall we have dug holes in some of these hollows, about three feet deep, and filled them with salt hay. Of course, we have not had as bad a freeze as last season, but we are satisfied it has done us good already. Would dig them at least a foot deeper another year. As I have stated before, you have got to have good bearing varieties to get a crop that will pay, and the trouble is you don't always know when you have got them. You may have a variety that is doing well this season. The next Spring you set acres of them, and when they fruit the next season you discover less fruit and less vines than the previous season. They show loss of vitality, both in growth and fruit and vines. But there are some kinds that do well nearly every season, like the Haviland and Gandy.

There is another thing you want to watch and that is to keep them true to name. Buy your plants of a man that keeps his plants true to name. I remember it took me four years to get the genuine Haviland. I got all sorts of spurious plants and set acres of them, and the loss can hardly be estimated; but that all goes in as experience. I know it is almost impossible to keep them from mixing, but every grower should try his best to do so, as it means a big difference in the crop.

Now, in regard to what is a good crop. We have had acres that have produced 6,000 quarts, and one season I remember our whole crop averaged over 5,000 quarts to the acre. Last season it was 3,500 to the acre, including the four acres that were winter-killed, and the prices were above the

average, so we got a fair profit and that seemed almost impossible in the spring. I believe I have never had a season that I did not get some profit from my strawberries.

As regards crates and baskets. The baskets we buy early in the season. This season we bought in December and have them in our buildings now, ready to use as soon as the crop is ready. The crates we buy of the market men in the fall and winter in our local market, and when we are shipping to Boston, our agents there buy for us and ship them to us. We used to get them as "returning empties," but the railroad company is pleading poverty and we have to contribute to their needs by paying freight.

I am aware the subject is the successful culture of fruit and vegetables, but I do not see how you know you have been successful until you have heard from the marketing end. There have been many changes in the marketing since I have been in the business. We used to get all our crates and baskets back, and if the commission men failed to return them they had to pay for them. The crates always came back free. That was the time when the railroads were liberal and had plenty of money. I hope we have got to the limit in giving baskets, crates, etc.; in fact, I do not know as there is anything left to give unless they take the holders the pickers use. We do not sort our berries, i. e., we do not dump the baskets, but depend on our pickers to do their work honestly. Some pickers will pick better than others anyway, and some rows have better berries than others, so in that way we sort our berries and we aim to have the whole crate as good as the top layer. We have tried dumping them and found it injured the berries, and our agents have complained that the berries were soft and the baskets were not full. We have come to the conclusion that it pays to put men on the bed to watch the pickers. Berries that are picked right will carry right. The prices are not as large as 25 or 30 years ago. Then 25 and 30 cents was often a ruling price, and I have sold them for 50 cents per quart, but we get nearly three times as many berries to the acre as we used to in those times. In the labor of picking we pay the same as 30 years ago, two

cents per quart, and I am glad it is so, as every good picker earns what they get.

I believe the future for the grower of strawberries is as bright as the present, and perhaps more so. There are improvements in cultivation and marketing and new varieties are being introduced that produce larger crops than seemed possible a few years ago. The more there are grown, the more demand. There may be a large crop some year and come a glut in the market, but that seldom happens. As a rule, good fruit will always sell, and that is just what every grower should strive to do—grow good fruit.

SECRETARY MILES: I have a matter of business I would like to propose before we take up the next matter. One year ago the Society passed a resolution that we should have a finance committee, and we found that committee quite useful during the year, and I would suggest that we have such committee again this coming year, and will introduce the following resolution:

Resolved, That a Finance Committee of three be appointed by the President and Vice-President, who shall as soon as practicable after each annual meeting make an estimate of the receipts of the Society for the coming year, and from these estimated receipts make such appropriations for the various departments of the Society's work as in their judgment may seem best, provided, however, that the total appropriations shall not exceed 85 per cent. of the Society's estimated income. Also that all bills shall be approved by the chairman of the finance committee before payment of the same by the Treasurer.

This resolution was duly seconded and adopted by vote of the Society.

A MEMBER: I wish there were time here to discuss one phase of this subject of selling fruits and vegetables. For instance, I do a little fruit and market gardening near the city, and there are hundreds of Jews that go out into the country districts and buy produce, and I have met them here in the city selling sweet corn, for instance, for seven cents

a dozen. Now the question is, whether these Jews steal it the night before, or whether some fool of a farmer is willing to sell it to them for four or five cents a dozen. This Jew peddling business ought to be done away with for the benefit of those who are growing and selling produce. I believe the farmers and the market gardeners would have a better show of disposing of their crops if it were not for those who cut down the price of produce to the last fraction of a penny for the sake of underselling those who raise it.

A MEMBER: I think that point can be well brought up and taken care of in the work of this organization. Of course these people do get their corn somewhere, but a large part of it comes from the markets, and it is withered corn which has been left over from the day before, and the majority of the people ought to know it, but nevertheless some of it does come from the country, and it would be a great advantage both to us, and to the farmer and the public in general, if it were done away with.

PRESIDENT EDDY: I will say the purpose of this Society is to educate the farmers not to do this thing, and I doubt if any of the members do it. I met one of those Jew peddlers twenty miles from Hartford one day with barrels, and I asked him what he had, and he said he had apples. Now he goes out and buys those apples from some of the farmers, and brings them into the city and sells them very cheap. Now that is what our Society is for—to educate the farmers not to do this very thing.

MR. SMITH: I believe there is another side to this Jew question, and I think it is well worth thinking of. The Jew peddler takes the produce from the farmer and carries it to the consumer. He skips the middleman, and he enables the farmer to get rid of his crop, and he often enables the farmer to sell his goods, when otherwise he couldn't sell them at all. I don't believe on the whole the Jew peddler stands in the way of the farmer getting a good price for his produce: I do believe that often and often he is the means of doubling the sale. It seemed to me, this very year in New Britain, that twice the plums were sold because of the Jew peddler, for he took the plums to the consumer and forced them on him

almost, and I believe we shall get a better price next year for our plums, because of the work of the Jew peddler this year, and the same thing applies to many other things. The Jew peddler is our industrious friend and helper in bringing our goods often fresh to the consumer, and compelling him to take them, when the storekeeper will only take his goods to the consumer once a day.

A DELEGATE: I think the Jew peddler is a necessity in some cases, especially when there is a glut in the market. When the fruits are not worth taking to a first-class grocer or private customer, the Jew will take them and he will spend the whole day in selling a few quarts of this and that fruit, and thus get rid of the fruit, which otherwise would be lost or put on the market and so decrease the price.

MR. FARNHAM: It has often occurred to me, and I believe in it, that if we would only sell two-thirds or three-quarters of our product, and throw the other part away, we would be doing each other a good service. I don't think we ought to get exorbitant prices, or to try and extort large prices from the consumer, but I don't think there is any fear of that, for I think that vegetables and fruits are sold for much less, in comparison with the other commodities of life, and I think if we threw away some of them, and didn't put the labor into gathering them and getting them ready for the market, and crowding the market down, we would be better off.

A MEMBER: I think the Jew peddler is a worthy fellow, and he is trying to get a living, and I know he will often pay a price for good goods, sometimes more than we can get in open market. The trouble is they buy those cheap peaches, which are not often worth eating—that is, the first early peaches that ripen—and sell them to the consumer, and it gets a bad reputation for this fruit; then when the good peaches come along and the consumer has to pay more for them, he thinks they are robbing him. But as a general rule, they don't sell to the wealthy class of people, but to the working people, and I think we ought to have a good deal of respect for them, because they get rid of that class of goods, and they don't get any too much for them either. The trouble is with the farmers; we ought to sell them only good goods,

and if we do this, that is, sell him as good goods as we sell anybody else, I think the Jew will pay as good a price for them as anybody else will.

A MEMBER: That corn that was bought and sold at five or seven cents a dozen ought to have gone into the hogpen or hen yard, anyway. But there is one thing more. The Jew comes into your place and buys your refuse stuff, for instance, berries. He will buy a number of crates of your poorer berries, and a few baskets of good fruit, and put them on top of the poor fruit, and go among the better class of people and palm them off as first-class fruit, and the result is when you come to them with good fruit, they will say to you, "I don't want them; I bought some the other day and the bottom of the package was nothing but decayed fruit."

PROF. W. E. BRITTON: It has already been mentioned that our state law regarding the inspection of nursery stock has been thought unconstitutional by the legal committee of the National Nurserymen's association, because we require that all stock coming into this from other states shall bear a statement that it is properly fumigated, while we do not require this of our own nurserymen. Now, as a matter of fact, our own nurserymen do this, but this legal committee have advised the nurserymen outside our state not to pay any attention to our Connecticut law, because they are sure it would be construed as unconstitutional. Now what we wish to do is to change our law in order to make it constitutional. If we do we must either repeal this part which says that others must put on a statement that their stock has been fumigated, or else we must require everybody to fumigate their stock, our own nurserymen as well as others outside our state. In order to get some expression from this society, I would like to have this matter brought up. It seems to me that something should be done. I am not in favor of fumigating everything which the nurserymen have for sale, and I should exclude all conifers and herbaceous plants unless they were found to be infested, but in order to bring this matter up, I am going to offer a resolution providing for the fumigation of certain kinds of stock in Connecticut.

Prof. Britton then presented the following resolution:

Resolved, that Section 4388 of the General Statutes of Connecticut be revised to read as follows:

"All deciduous nursery stock liable to infestation by the San José Scale and grown or offered for sale in Connecticut, shall be fumigated with hydrocyanic acid gas when dry and offered for sale each season. This shall include all fruit trees and ornamental shrubs (to be specified here) and exclude all conifers and herbaceous plants unless such should be found infested, when they may be ordered destroyed or fumigated by the State Entomologist. All nursery stock shipped into this State from any other State, Country or Province, shall bear on each package a certificate that the contents of said package have been inspected by a state or government officer and appear free from all dangerous insects or diseases: Also that the package bear a statement that such stock has been properly fumigated unless the character of said stock be such as to be exempt from fumigation in Connecticut.

"It shall be the duty of each carrier or transportation company to notify the State Entomologist of each box or package of nursery stock entering the State without the proper certificate and inform him where the same may be examined. Any failure to notify the State Entomologist is punishable by a fine of not more than fifty dollars. All stock shipped into the State without the proper certificate or statement that it has been fumigated, may be returned to the consignor at his expense, by the consignee, or may be inspected by the State Entomologist, the expenses of the inspection to be borne by the consignor and may be deducted from his bill for the stock. If found infested, such stock may be destroyed or fumigated at the discretion of the State Entomologist."

MR. LUPTON: We had that same difficulty in our own state, and in order to avoid it, we left the matter with the State Entomologist, providing only that he should make such rules and regulations for the entrance of stock from outside the state and for home-grown stock as he deemed proper. If in his judgment he thinks fumigation is necessary, he imposes that penalty, and if he does not think so, he does not do it. I am not at all sure but what it would be a good idea for your legislative committee to look into that matter, and for you to leave the matter of the exportation and importation of nursery stock in the control of your State Entomolo-

gist, and let him in conjunction with the Entomologist of New York state formulate a plan which will satisfy both states. In addition to that we impose a state tax of twenty dollars on every nurseryman who does business in the state of Virginia, and all that money goes into the hands of the State Entomologist, about six or seven thousand dollars, and he spends that money in traveling around the state and inspecting nursery stock, and we find it works admirably. We find it shuts out the tree peddler, because he can't afford to pay that tax, and the State Entomologist is authorized to withdraw a license at any time his instructions are violated, and he can shut up any nursery in the state under twenty-four hours, and we have found that our law works admirably, and I think it would not be a bad idea, so that instead of making a hard and fast rule in your law, to leave the matter in the hands of your State Entomologist.

MR. T. E. CROSS: This same matter was thrashed out in our eastern New York state association two years ago in New York city, and this question of compulsory fumigation of all imported stock was very carefully gone over, and if I recollect the response of the State of Connecticut was that we want a line drawn right down through that stock, and that it must be fumigated and have a clean bill of health, or else it would come back. Now I know right across the river from Poughkeepsie there were peach orchards that it was supposed were perfectly free from scale, aside from the owner; the owner suspected there was scale in there, and he made a careful examination and found scale in there, and for the sake of testing the capability of the state inspector he had some of them come there and examine the trees, and I am told that the inspector didn't find a scale.. If you have any law, let it hew right to the line on both sides, that would be my opinion, if I was figuring from the point of a resident of this state.

A MEMBER: This proposed change in the law, I suppose, will put the matter just the same on one side of the fence as it is on the other, that is, make our people do just the same as other people do who send stuff in here, and I am in favor of that.

MR. CROSS: In New York state they have to fumigate stock. Anything that comes in from any contiguous state has to be accompanied by a certificate of fumigation, otherwise it can't come in. There is no chance of dilly-dallying about it, and if it isn't fumigated it has got to be destroyed. I know of a case where there was a consignment of a thousand trees came in from New Jersey, and it was just after this law went into effect, and the party did not abide by the law, and he had to pay the consequences, and it cost him a lot of money.

PROF. BRITTON: I would like to have it distinctly understood that the resolution is not yet in proper shape, and it has got to be talked over with the nurserymen and the committee. The point is whether a change shall be made in that part of the law, and whether it should be put in in the form of compulsory fumigation, or in some other way.

The resolution was then put to vote and passed unanimously.

A MEMBER: I would like to call up question 20 to be answered by those who know something about it, and that is, "What is the outlook for the peach crop the coming season?"

A MEMBER: About a week ago I looked over a lot of buds, and about 98 per cent. were good, practically all alive.

A MEMBER: All I have examined are all right, and all the growers that I have talked with say that the crop is sure at the present time; of course, we don't know what may come.

MR. BARNES: I suppose they are in fine condition; and I believe they promise well for a crop.

MR. GEORGE HALE: I have tried them on five different orchards on the lowest ground and the highest ground, and they are all right on every piece of ground at the present time.

MR. JEWELL: Mr. President, earlier in the meeting the question of the Secretary's salary came up, and I believe there was no definite action taken. While I am not prepared to say just what the amount should be, in that justice may be done

I move that the compensation of the Secretary for his services be left with the Executive Committee.

MR. BUTLER: It seems to me as the secretary is one of the executive committee himself, he might be a little delicate about having it left in that way; still, the other two-thirds of the committee might overrule him if he wanted the amount made less. I am under the impression that the present salary of the secretary is \$100.00, and last year the suggestion was made that he ought to have \$150.00. But I can speak for the secretary in a way, because I held that office when the salary was less than it is now, and I know that when this society had only one hundred members, there was a lot of work connected with the office, and if the secretary gets \$150.00 it will be very small pay for the work he does. I would amend the motion by referring the matter to the Finance and Executive committees.

Motion as amended seconded and carried unanimously.

No further business appearing and the program having been practically finished, a motion to adjourn was made and carried, and at 4:45 President Eddy declared the Fourteenth Annual Meeting adjourned sine die.

Report of the Special Committee on Fruit Exhibit With List of Awards.

CLASS I.

BEST COLLECTION FOUR VARIETIES OF MARKET APPLES.

First premium to H. E. Savage & Sons, Berlin	\$2.00
Second premium to Connecticut Agricultural College, Storrs	1.00

CLASS II.

BEST COLLECTION FOUR VARIETIES OF DESSERT APPLES.

First Premium to Connecticut Agricultural College	\$2.00
Second premium to E. M. Ives, Meriden	1.00

CLASS III.

BEST SINGLE PLATE OF APPLES.

Baldwin.

First Premium to J. E. Andrews, New Britain .....	.50
Honorable mention, G. W. Staples, Hartford and S. G. Cook, Branford,	

Roxbury Russett.

First Premium to E. M. Ives .....	.50
Honorable mention, S. G. Cook and Conn. Agricultural College.	

R. I. Greening.

First Premium to H. E. Savage & Sons .....	.50
Honorable mention, E. Manchester and A. B. Cook.	

Talman Sweet.

First Premium to Charles M. Perry, Southbury .....	.50
Honorable mention, J. E. Andrews.	

Peck's Pleasant.

First Premium to E. M. Ives .....	.50
Honorable mention, Robert Hubbard and C. I. Allen.	

Fallawater.

First Premium to E. M. Ives .....	.50
Honorable mention, Conn. Agricultural College and A. B. Cook.	

King.

First Premium to George W. Staples .....	.50
Honorable mention, Thomas Callahan and E. Manchester.	

Northern Spy.

First Premium to George W. Staples .....	.50
Honorable mention, C. I. Allen and E. M. Ives.	

Hubbardston.

First Premium to H. E. Savage & Sons	\$0.50
Honorable mention, C. I. Allen and S. A. Griswold.	

Wagener.

First Premium to George W. Staples .....	.50
Honorable mention, C. I. Allen.	

Golden Russett.

First Premium to E. M. Ives .....	.50
Honorable mention, E. Manchester.	

Sutton.

First Premium to Connecticut Agricultural College50
---	-----

McIntosh.

First Premium to C. M. Perry .....	.50
Honorable mention, G. W. Staples and Conn. Agricul. College.	

Fall Pippin.

First Premium to Connecticut Agricultural College .....	.50
Honorable mention, E. Manchester.	

Belleflower.

First Premium to C. I. Allen, Terryville .....	.50
Honorable mention, E. Bliss.	

Grimes Golden.

First Premium to C. I. Allen, Terryville50
--	-----

Rome Beauty.

First Premium to F. B. Miller, Bloomfield50
---	-----

Red Canada.

First Premium to Connecticut Agricultural College50
---	-----

Moore's Sweet.

First Premium to Willis E. Frost, Bridgewater50
---	-----

Westfield.

First Premium to E. M. Ives50
-----------------------------------	-----

Fancuse.

First Premium to George W. Staples50
--	-----

CLASS IV.

SINGLE PLATE PEARS.

Howell.

First Premium to Connecticut Agricultural College50
---	-----

	<i>Vicar.</i>	
First Premium to H. E. Savage & Sons		\$0.50
	<i>Lawrence</i>	
First Premium to C. I. Allen .....		.50
	<i>Duchess.</i>	
First Premium to C. I. Allen .....		.50

CLASS V.

BEST PACKED BARREL OF MARKET APPLES.

First Premium to H. E. Savage & Sons	2.00
Second Premium to E. M. Ives	1.00

CLASS VII.

BEST PACKED BASKET OF MARKET APPLES.

First Premium to E. Manchester, Bristol	1.00
---	------

The Implement Exhibit, with List of Exhibitors.

The B. L. Bragg Co., Springfield, Mass.

Empire King Spray Pump, made by The Field Force Pump Company of Lockport, N. Y.

Exhibit of Deming Company's spray pumps, Deming's Peerless Hand and Power Pumps, Demings new Hydram.

The "Auto Sprayer" and compressed air spray pumps made by E. C. Brown & Co., Rochester, N. Y.

Electric Wheel Company's Low-down wagon.

Leggett & Brother's Dry Powder Bordeaux Mixture and Bordeaux and Paris Green Compound.

Leggett's Dry Powder Gun, also Leggett's Kero-water Brass Sprayer.

Anderson's Gasoline Engine for farm pumping.

Lunt & Moss.—One and one-half horse power gasoline Engine with self-contained pump, a very complete display.

F. W. Knowles, New Milford, Conn.

Exhibit of the Comet Force and Spray Pumps. Double action.

Fairbanks & Company, New York City.

Gasoline and Gas Engines, two and one-half horse power.

Also complete line of Fairbanks scales, fruit presses, spice mills, meat choppers, hand trucks, etc.

The Charles Warner Company, Wilmington, Del.

The new "Kerosene-Linoid" for spraying mixtures, also Hydrated Lime.

The Spramotor Company, Buffalo, N. Y.

Potato spraying outfit.

Niagara Gas Sprayer Company.

Power sprayer, gas tank and spraying tank connected.

F. E. Boardman, Middletown, Conn.

Air cooled gasoline engine.

Chas. I. Allen, Terryville, Conn.

Display of The Eclipse Spray Pumps.

Harvey Jewell, Cromwell, Conn.

Exhibit of Hardie Spray Pumps (three styles).

The Cutaway Harrow Co., Higganum, Conn.

Clark's double and single action Cutaway harrows.

Reversible sulky disc plow.

Gardner's Nursery, Cromwell, Conn.

Exhibit of nursery trees.

Barnes Bros. Nursery Co., Yalesville, Conn.

Exhibit of nursery trees and plants.

Coles & Co., New York City.

Extensive line of fruit packages, baskets, crates, covers, etc.

Connecticut Agricultural Experiment Station, New Haven.

Interesting and instructive exhibit of specimens of diseased plants, injurious insects, etc.

Also photographs of spraying experiments, station buildings, etc.

The thanks of the Society are extended to all the firms who took part in this exhibit and for their cordial coöperation in making this one of the most attractive and valuable features of the meeting.

N. S. PLATT,	}	Committee.
L. A. CLINTON,		
STEPHEN HOYT.		

A Brief Record of Field Meetings, Institutes and Exhibitions of 1904.

Summer Field Meetings.

Perhaps no other single feature of the Society's many activities is so popular with the members as the outdoor gatherings held during the summer months. In 1894—three years after the formation of the Society—this combination of "Horticultural meeting and picnic," was inaugurated. Thus Connecticut enjoys the distinction of being the first State in the East, at least, to successfully carry out this admirable plan of gathering fruit growers and lovers about the growing tree and vine for study and recreation.

Every season since, the Society has made it a point to hold several Field days, each one seemingly more enjoyable than the last, and always productive of the keenest pleasure and profit. Latterly, however, owing to the steady growth of the Society in numbers, it has become no small undertaking to entertain the large membership and only the more extensive farms are willing to attempt it. We think there is often as much to be learned by a visit to some of the smaller fruit farms, and where several of such places can combine in an invitation to the Society, a splendid meeting is the result. Very often the local Grange may coöperate in these outings, making, with very little effort and expense, a profitable day for both hosts and visitors.

But whatever the arrangements, the main point is the fact that the gathering is held right in the field or orchard, where all conditions can be seen and studied at first hand. Our experiment station workers also are given the opportunity to demonstrate and point out the work of insects and diseases much better than when the object of the lesson is wanting.



Plate IV.—A Bit of Meadow and Orchards. View on the big Lyman Farm of over 500 acres in Middlefield.

Altogether there seems to be wonderful possibilities in the good that may come through the summer field meetings, and every effort should be made to continue and improve them.

The first field day of 1904 was announced as follows:

THE CONNECTICUT POMOLOGICAL SOCIETY
ANNOUNCES THE OPENING FIELD MEETING OF THE
SEASON

To be held at the Chas. E. Lyman Farm, Middlefield, June 28, 1904.

Mr. Lyman extends a cordial invitation to members of the Society, the Dairymen's Association, Farmers and all others who are interested, to visit his extensive farm, Tuesday the 28th inst.

It is planned to make this the biggest and best Field Day ever held in Connecticut.

No fruit grower or farmer can afford to miss it!

The Lyman Farm is one of the largest and best managed farms in the State—comprises over 500 acres, beautifully located on the range of hills, about six miles back from Middletown and the Connecticut River. The leading crops are hay, corn, apples and peaches, and many sheep are fattened. Some 80 acres are devoted to peach orchards and 40 to apples and peaches. Most of the peach trees are showing a good crop of fruit (an interesting sight this season), and the view from the orchards, over 500 feet above tide water, is magnificent. Mr. Lyman will harvest 500-600 tons of hay this year, some fields averaging three tons to the acre. There are 25 acres of corn and many other features of practical interest to all. This will be an excellent opportunity to observe and study Mr. Lyman's novel and successful methods.

You are urged to come and bring the ladies, too!

Favorable weather and a good attendance made this meeting a success.

A large number of the leading fruit growers and dairymen of the state were present, and but for the fact that the haying season was just commencing many more would no doubt have availed themselves of the chance to inspect this fine farm and enjoy Mr. Lyman's cordial hospitality, for it is doubtful if the Society ever met where farming and fruit growing are carried on with so much success and such business-like methods.

Big teams were provided and the visitors spent the morning driving about and inspecting the extensive peach and apple orchards, the hay fields, where a splendid crop of very heavy grass was just ready to harvest, the fields of corn and

other staple crops, winding up at the barns, where a large dairy herd is kept and which in winter accomodates several thousand lambs that are fed for market, "Lyman's Lamb" being a well known product in the New England markets.

All these various crops showed the best of care and good management, and could not help but furnish valuable lessons as well as inspiration for all who saw them. Not a few of the visitors were heard to remark, "I did not realize that Connecticut had such big farms under cultivation as this one and so successfully managed as well."

About one o'clock the company sat down to a bountiful basket lunch spread on the shady lawns in front of the Lyman residence. Plate IV. gives a view of Mr. Lyman's pleasant home and the assembled company.

Following dinner President Gulley called the gathering to order for a brief season of speaking and discussion.

Mr. Lyman welcomed the visitors and told them something of his farm operations. He said he expected his hay crop—one of his money crops—would yield 600 tons this season.

Professor Britton, State Entomologist, spoke next. He referred to the damage to orchards by the scale and winter-killing throughout the state. It is hard to account for some of the injury, but trees infested with scale had killed out the worst.

The Rev. Mr. Slaughter of Middlefield gave a fine talk and paid a high tribute to such energetic fruit growers as Mr. Lyman. "We owe much to the men who overcome great odds and succeed in producing fine fruits," said he.

Vice-President J. M. Hubbard, who had just returned from the St. Louis Exposition, was called out to tell of what he had seen at the Fair. He said there was much to see of interest, and that Connecticut's exhibits are on the whole very creditable to the state. Referring to the Lyman farm, Mr. Hubbard said it is a remarkable combination of fruit farming, hay, sheep and general crops. It is the man behind it that makes it the success it is.

President Gulley followed with an appeal to growers to keep the fruit exhibit at St. Louis supplied and up to the standard already set.

Mr. Coleman, of the Hale orchards, and Mr. J. N. Barnes both spoke of the injury to peach trees from winter-killing. Many trees that looked well in the spring are now failing, and the fruit is dropping off. Mr. Barnes is trying the application of quick acting fertilizers and the trees seem to be improving. Trees that were cut back this spring responded better than the others. The trees are loaded with fruit and it is uncertain what the outcome will be. Mr. Barnes said he never had seen anything like this sort of injury before.

Professor L. A. Clinton, of Storrs Experiment Station, said he wished every farmer in the State could be here to-day and look over this splendid farm. It is a great object lesson to us all. The speaker urged upon farmers to grow more clover on their farms and also referred to the potato blight and the necessity of spraying to control it. Mr. L. Sanderson, of New Haven, spoke pleasantly and said he thought that in all New England no better example of the successful business farmer could be found than our friend Mr. Lyman. Professor Beach of Storrs told of the fact that young men are coming from the west to take up farms here in New England. This should teach the eastern farmer to have more faith in his soil.

Other bright speakers who addressed the meeting were Dairy Commissioner Noble, B. C. Patterson, Seaman Mcad and H. O. Daniels, Vice-President of the Dairymen's association.

The visitors passed a vote of thanks to the host and when the hour for the return came, took the special train that had been arranged for from New Haven and Middletown. All agreed that it had been a day most profitably spent.

Field Meeting at the Connecticut Agricultural College, August 10th, 1904.

Plans were early laid for a very enjoyable excursion to the College at Storrs, but unfavorable weather conditions nearly upset them.

The day dawned cloudy and threatening and many were detained from starting. However, about 150 of the Society,

including many ladies, made the trip, but by the time the College was reached a heavy rain was falling and the pleasures of the day were interfered with.

Nevertheless the visitors found much of interest in looking through the various buildings, laboratories, museum, dairy and horse barns and greenhouses, the forenoon being profitably employed. Many improvements and additions had been made in the different departments since the Society last met at the College in 1902. The visitors noted all with interest and pleasure and commented favorably on the fine appearance of everything connected with the institution. The lawns and campus looked especially fine with the many new plantings of trees, shrubbery and flowers. There are few finer locations in the state than that occupied by the College.

The picnic planned for in the grove had to be abandoned on account of the rain, and instead the company had dinner in the large dining hall.

After dinner an informal meeting was held in the College chapel, with Vice-President Hubbard presiding. Professor and Mrs. Stoneburn rendered an excellent musical selection, after which President Stimson welcomed the visitors, expressing pleasure that so many had braved the weather to visit and inspect the College. He explained the work of the College and its needs, and appealed to all to support the institution in its efforts to provide for the education of our farm boys and girls. Professor A. G. Gulley—whose connection with both the College and the Society led to arranging for this meeting—was the next speaker. He said he took peculiar pleasure in welcoming his friends of the Society on this day, which was the tenth anniversary of his coming to the College as head of the Horticultural Department. He spoke at length of the progress of the work in that department. B. C. Patterson, a trustee of the College, called attention to the new buildings that are needed for this growing institution and thought the next Legislature should provide liberally for it. The spokesman for the dairymen was H. O. Daniels, who expressed his faith in the College and its work.

A piano solo by Miss Kohler was much enjoyed. G. G. Tillinghast, of Vernon, was the last speaker. He was asked



Residence of Charles E. Lyman, Middlefield, where the Society gathered for a Field Meeting, June 28, 1904.



Starting for the Orchards. Field Day at the Lyman Farm, June 28, 1904.

to tell of his success with poultry and fruits, both of which are special "crops" with him.

The rain having ceased, a favorable chance was offered to spend the remaining hours in looking over a portion of the fields and orchards. Under the guidance of Professor Gulley the visitors were driven to the experimental orchard on a distant hill-top, where a great variety of fruits are being grown. The growers present discussed many important points connected with Professor Gulley's work.

The thinning of apples on heavily loaded trees is practiced each year at the College and the results were of interest to the visitors. The nursery, where practically all the trees and plants used are propagated, came in for a share of attention. There were many other interesting features of special interest to fruit growers, but the limited time would not allow of more than a passing glance, as those who came by train were obliged to leave early, returning by busses to Willimantic.

The thanks of the members are due to President Stimson, Professor Gulley and the other officers of the College for providing so enjoyable and profitable a field day.

Further field meetings for the season had to be omitted, as no suitable locations could be arranged for and the attention of the Society centered in planning for the annual fall exhibition of fruits at Rockville in September.

Report of Institute Work of 1904.

The last annual report contained a record of the institutes conducted by the Pomological Society during the winter of 1903. It is the intention of this report to briefly cover the institutes held in 1904.

As noted elsewhere in the Secretary's report, the Society assisted in conducting some 20 institute meetings held in connection with local Granges in nearly every county in the state. The meetings were all well attended and productive of more good, even, than those held in previous years.

Just here it may not be improper to state that for several years a somewhat peculiar situation had existed in Connecticut in regard to farmers' institute work, viz:—three separate organizations—the State Board of Agriculture, the State Dairymen's Association and the Pomological Society—had been conducting institutes more or less regularly, and each in its own way and without any specific fund for the purpose. In the absence of any state law requiring a definite amount of institute work to be done (except in the case of the Board of Agriculture, which was charged with the dissemination of agricultural information generally) the work by the several organizations had been simply a volunteer one and not carried on according to any well defined plan or system.

In the fall of 1903 a few of the strongest advocates of institute work, feeling that Connecticut was not keeping pace with other states in this most important educational movement and that a better system as well as a wiser economy of money and effort was demanded, decided to call a conference of those interested in the subject. Accordingly a meeting was held at the Capitol in Hartford on the 10th of November, and comprised about twenty delegates, representing the Board of Agriculture, the Dairymen's Association and the Pomological Society. The whole subject of farmers' institutes in Connecticut was freely discussed in an informal manner, the disadvantages of the methods at present employed were pointed out and suggestions offered for the improvement of the work.

Inasmuch as each of the organizations represented were working with practically the same object in view, viz: the betterment of agriculture in the state, it was suggested that a consolidation of interests, so far as possible, along institute lines, would be advisable.

To this end, the conference agreed to the appointment of a committee consisting of Secretary Brown of the Board of Agriculture, Secretary Noble of the Dairymen's Association and Secretary Miles of the Pomological Society, and instructed this committee to devise a "combined plan" of institute work for the coming winter and put the same in operation.

After taking this initial step in the direction of the improvement of institute work, the meeting adjourned. Subsequently the "Institute Committee" arranged a plan for a series of joint institutes to be held under the auspices of the three organizations and in different sections of the state wherever the demand was greatest, and each organization agreed to share the expense of the work.

As in former years, local granges seemed to offer the best means by which institutes could be arranged for in the various towns and accordingly the granges were appealed to in the following circular letter sent out by the Society early in the winter.

Learning that members of your Grange have expressed a desire that a Farmers' Institute be held in your town this season, in behalf of the State Committee on Institutes, I write to inform you that we are now prepared to arrange for institutes throughout the State.

With a consolidation of interests, larger funds, a better system of work, and an attractive list of good speakers, we confidently expect to carry out better meetings than ever before and make them in every way more helpful to the farmer and the general public.

If you will send in your invitation at once, we can promise you our best services and will arrange such program as you desire, whether it be along the line of fruit growing or dairying (or these two subjects combined) or general farm crops.

The State Committee will meet the expense of such a meeting, only requiring you to supply a suitable hall, conveyance from railroad, if necessary, and some sort of lunch at noon.

When you have discussed and decided as to holding the institute, please fill out the enclosed blank, not forgetting to select one of the dates named in the available list, which date we will reserve for you, if not already taken up. Also suggest what line of subjects would be of most interest to your people and we will then be able to send the right speakers. If you want an institute this winter, be prompt to act, so that we may plan the work to best advantage.

Hoping you will decide to let us coöperate with you in holding a successful Farmer's Institute and thus share in the benefits of this important work,

Very truly yours,

Member of Institute Committee.

The Dairymen's Association and the Board of Agriculture also invited requests for institutes.

As a result of all this many requests were received and

as far as possible with the limited time and funds at command, were granted and institutes arranged for.

The opening institute was held by the Pomological Society at Collinsville early in December. This was followed by meetings at Southington and Danbury during the month of January; at Waterbury, Feb 10th; Trumbull, Feb. 17th; Rockville, Feb. 18th. Then a week's series of institutes was arranged, covering Cannon, Woodbridge, Westfield and Coventry, with the Hon. Mortimer Whitehead of New Jersey as the leading speaker, assisted by workers from within the state.

This was a most successful series and productive of much good. Brother Whitehead gave very practical talks on general fruit culture and was enthusiastically received in every instance. We regret that it is impossible to give here a more detailed report of his addresses.

The next institutes were at Plainville and Clinton, and for the second week in March another series of institutes was carried out with Mr. J. D. Deitrich of Pennsylvania as the principal speaker. His addresses were on intensive dairying, and in addition the program comprised talks by leading fruit growers. Berlin, Cheshire, Winsted and East Haddam had these institutes and all were successful in point of attendance and interest.

The Pomological Society's institute work for the winter closed with a series of meetings held at New Canaan, Greenfield Hill, Andover, Danielson and Bethlehem the week of March 15th.

Mr. R. H. Race of Massachusetts was the leading speaker at four of these meetings, giving splendid talks on strawberry growing and marketing. Together with some of the leading Connecticut workers he made the series profitable and successful in conclusion.

The "consolidation plan" of holding institutes, while not by any means perfect, yet proved to be a step forward in the direction of better planned and more profitable institutes, avoiding among other things any confliction as to dates and locations.

The experiment of 1904, however, plainly showed the need of even a better system of institute work, with a general direc-

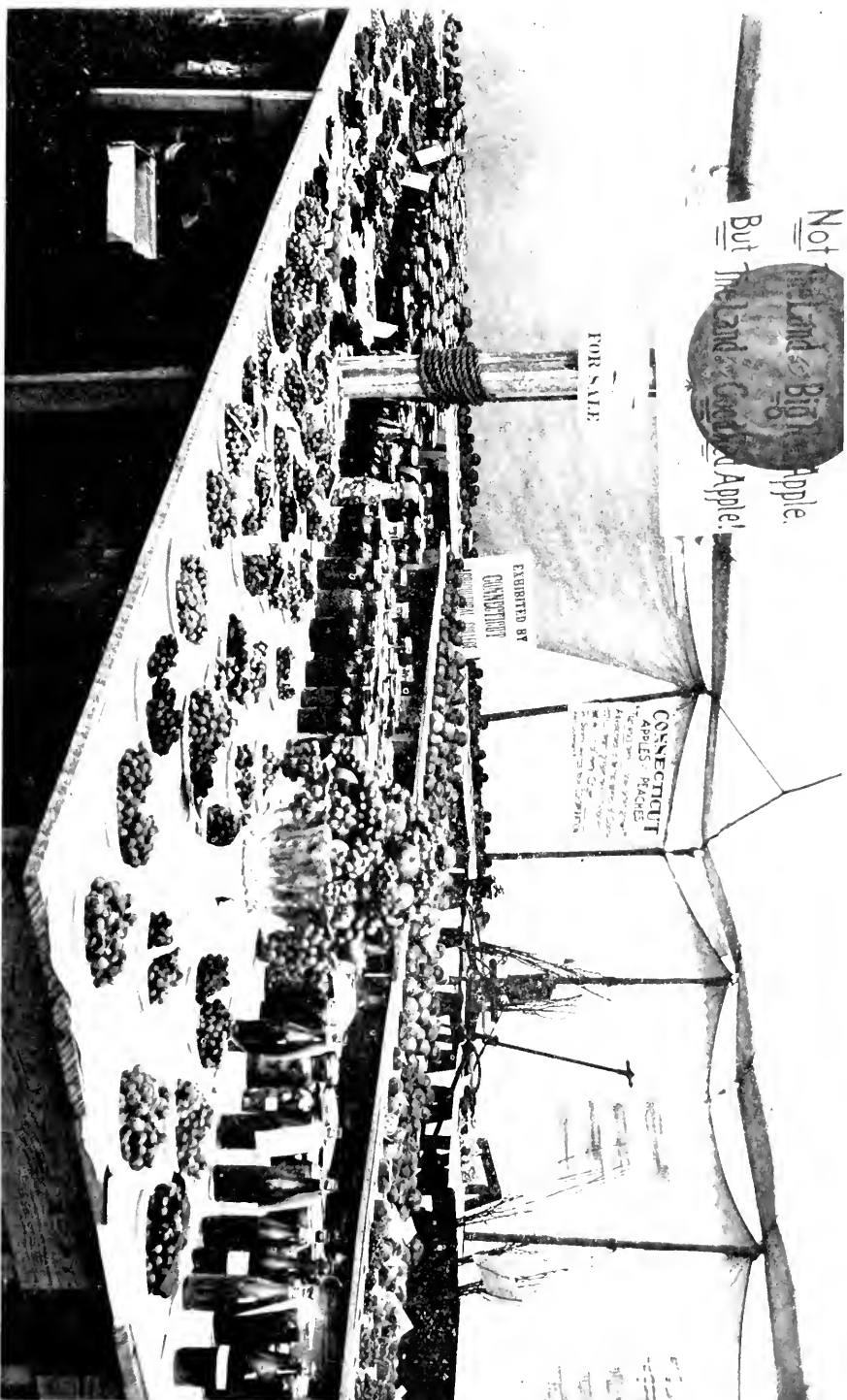


Plate VI.—The Fruit Display at the Society's Seventh Annual Exhibition.

tor in charge and ample funds to cover every section of the state and meet all demands.

With the interest in institutes increasing each year and a growing appreciation of the importance of the work, it is believed that the time must soon come when Connecticut will adopt and put in operation advanced methods in institute work that will compare favorably with those of other states.

The Seventh Annual Fruit Exhibition, 1904.

SCHEDULE OF PREMIUMS OFFERED.

FIRST DIVISION—COLLECTIONS.

Class 1.	Best collection of fruits by grower, of which not more than two-thirds to be of apples. See Rule 7.	1st	2d	3d
		\$10.00	\$5.00	\$3.00
Class 2.	Best collection, 15 varieties of apples,	5.00	2.50	1.00
Class 3.	Best collection, 10 varieties of apples,	3.00	1.50	.75
Class 4.	Best collection, 8 varieties of apples, for general purposes,	2.00	1.00	.50
Class 5.	Best collection, 5 varieties of apples, for market only,	3.00	1.50	1.00
Class 6.	Best collection, 12 varieties of pears,	5.00	2.50	1.00
Class 7.	Best collection, 6 varieties of pears,	2.00	1.00	.50
Class 8.	Best collection, 12 varieties of grapes,	5.00	2.50	1.00
Class 9.	Best collection, 6 varieties of grapes,	2.00	1.00	.50
Class 10.	Best collection, 6 varieties of peaches,	2.00	1.00	.50

SECOND DIVISION—SINGLE PLATES.

Class 1.	Best single plate of following varieties of Apples, each,	\$1.00	\$1.00	\$.25
	Sweet Bough, Gravenstein, Fameuse, Hurlburt, Oldenburg, Twenty Ounce, Red Bietigheimer, Williams' Favorite, Fall Pippin, Porter, Maiden Blush, Wealthy, Talman Sweet, Baldwin, Cogswell, Hubbardston, Jonathan, Gilliflower, King, Northern Spy, Red Canada, Sutton, Wagener, Lady, Westfield, York Imperial, Jacob's Sweet, Belle et Bonne, Fallwater, Golden Russett, Roxbury Russett, Newtown Pippin, Peck's Pleasant, R. I. Greening, AND OF OTHER WORTHY VARIETIES, NOT TO EXCEED FIFTEEN.			
Class 2.	Best single plate of following varieties of Pears, each,	\$1.00	\$.50	\$.25
	Clapp's, Bartlett, Bosc, Angouleme, Louise Bonne, Diel, Onondaga, Anjou, Lucrative, Boussock, Buffum,			

Howell, Flemish Beauty, Mt. Vernon, Seckel, Clargeau, Lawrence, Sheldon, Easter Buerre, Keiffer, Le Conte, Nelis.

OF OTHER WORTHY VARIETIES, NOT TO EXCEED TEN.

Class 3.	Best single plate of following varieties	1st	2d	3d
	of Grapes, each,	\$1.00	\$.50	\$.25

Moore's Early, Brighton, Concord, Eaton, Hartford, Wilder, Worden, Isabella, Agawam, Delaware, Diana, Campbell's Early, Clinton, Green Mountain, Catawba, Lindley, Salem, Empire State, Martha, Niagara, Pocklington. OF OTHER WORTHY VARIETIES NOT TO EXCEED TEN.

Class 4.	Peaches and Plums, each valuable variety,	\$1.00	\$.50	\$.25
----------	---	--------	-------	-------

Class 5.	Quince, each valuable variety.	1.00	.50	.25
----------	--	------	-----	-----

Class 6.	Grapes grown under glass, one bunch each variety,	1.00	.75	.50
----------	---	------	-----	-----

Class 7.	Cranberries, best exhibit, any variety,	1st	2d	
		\$2.00	\$1.00	

THIRD DIVISION—CANNED FRUITS, JELLIES, ETC.

For Table Use.

		1st	2d	3d
Class 1.	Best collection canned fruit, 15 varieties,	\$6.00	\$3.00	\$2.00

Class 2.	Best collection canned fruit, 8 varieties,	4.00	2.00	1.00
----------	--	------	------	------

Class 3.	Best collection canned berries, 6 varieties. See Rule 8,	3.00	2.00	1.00
----------	--	------	------	------

Class 4.	Best collection pickles, 6 kinds, one quart each,	3.00	2.00	1.00
----------	---	------	------	------

Class 5.	Best collection jellies, 6 kinds,	3.00	2.00	1.00
----------	---	------	------	------

Class 6.	Best single can any of the above,75	.50	.25
----------	---	-----	-----	-----

Class 7.	Best sample unfermented fruit juice—each kind,75	.50	.25
----------	--	-----	-----	-----

Class 8.	Best collection plums, 6 kinds,	3.00	2.00	1.00
----------	---	------	------	------

FOURTH DIVISION—NUTS, ETC.

Class 1.	Best specimen any variety of cultivated nuts,	1st	2d	3d
		\$1.00	\$.50	\$.25

Class 2.	Best sample of native nuts, any kind,	1.00	.50	.25
----------	---	------	-----	-----

Class 3.	Best collection native nuts, made by boy or girl and correctly named (exhibitors in this class not required to be members of the Society),	2.00	1.00	.50
----------	--	------	------	-----

Class 4.	Best arranged table piece of home-grown fruits,	2.00	1.00	.50
----------	---	------	------	-----

Class 5.	Best packed barrel, choice market apples,	5.00	2.50	1.00
----------	---	------	------	------

Class 6.	Best box, choice apples,	2.00	1.00	.50
----------	------------------------------------	------	------	-----

Class 7.	Best collection of specimens of Fungous Diseases of fruits and melons,	1st	2d	
		\$5.00	\$3.00	

The awards to be determined on the size of the collection, neatness of preparation and display and accuracy of name by common names.

Class 8. Articles not classified for which discretionary premiums may be awarded.

RULES OF THE EXHIBITION.

Exhibitors are requested to bring or send their exhibits as early as possible. Tables will be in readiness on Monday, September 26.

Fruit for exhibition may be sent by Adams Express to the Society at Rockville, care of the Secretary, to arrive either Monday or Tuesday. Express charges will be paid by the Society and deducted from your premiums when awarded. Exhibitors should put their name and address on all packages. Also carefully label each variety.

Tuesday, September 27, will be devoted to receiving and setting up of exhibits.

Rule 1.—All exhibits must be received for entry not later than 3 p. m. of Tuesday, September 27, and must be in place by 6 p. m., as judging will begin promptly on opening of second day—Wednesday. (This rule will be strictly enforced.)

2. Entries of collection in First and Third Divisions must be made with the Secretary on or before Monday, Sept. 26, using enclosed entry blanks for the purpose, that proper table room may be prepared.

3. All articles entered, except in Fourth Division, must be grown or prepared by the exhibitor.

4. All fruits shall be correctly labeled (if possible) and except grapes and crab apples, five specimens, neither more nor less, shall make a plate, either single or in collection.

Of crab apples ten specimens, and of grapes three bunches, shall make a plate, except where noted. The collection also shall embrace just the required number of plates.

5. No exhibitor shall make more than one entry for the same premium, nor enter the same plate for more than one premium.

6. In the various collections the value of the varieties shown, as well as the conditions of the specimens, will be considered in making the award.

7. Entries in Division 1, Class 1, must not contain over two-thirds apples, or over one-fourth of any other single class of fruit. Division 1, Class 5, is intended to draw out the growers' ideas of value of varieties. In making the award this will be considered as well as the condition of the specimens shown.

8. Entries of different kinds of Canned Fruits must be self-evident; that is, separate varieties of "red raspberries" or "yellow peaches" will not be considered as distinct kinds.

9. Lists of varieties in all collections must be made and placed with entry card on collections.

11. Premiums will be awarded to members of the Society only. fine quality, wormy or diseased specimens will rank very low in making awards.

11. Premiums will be awarded to members of the Society only.

12. No exhibit shall be removed without the consent of the committee, until the close of the meeting. Exhibitors are requested to state whether fruit is to be returned to them, or donated to the Society.

Exhibitors are asked to donate exhibits to be sent to St. Louis as part of Connecticut's exhibit at the Exposition.

The above is the official list of prizes offered in connection with the Seventh Annual Exhibition, which was held at Rockville on September 27th-29th.

The schedule is printed here because it contains numerous revisions from year to year, and is valuable as a matter of reference for all who make exhibits. While the list is now thought to be pretty satisfactory, it is probable that some changes will be necessary in the future, notably in the Canned Fruit classes. This schedule is being accepted as a standard and exhibitors are becoming educated to its requirements.

It is also hoped that it may serve as a model for the various fairs throughout the state, whose premium list in the fruit department might easily be improved. The best thought of experienced fruit men and exhibition managers have been expended on the Society's list, with the idea in view of finally making it as nearly perfect as possible.

The exhibition of 1904 was wanted by Fairs in several towns in the state, Berlin, Rockville, Willimantic and Newtown offering inducements to secure the show. Having exhibited twice at Berlin and desiring to bring the exhibit within reach of other sections of the state, the officers finally decided to accept Rockville's offer and the exhibition was held in combination with that large fair September 27th, 28th and 29th.

The result was a very successful exhibition. Good weather prevailed; the fair itself was a large one and attracted throngs of people. Without doubt there was a much larger number of visitors to the Society's exhibition than in any previous year, and all were astonished and delighted with the great display of beautiful fruit. No single feature of the Rockville Fair attracted more attention, and the managers were well satisfied with the combined exhibits and believed that the results fully justified all the expense involved.

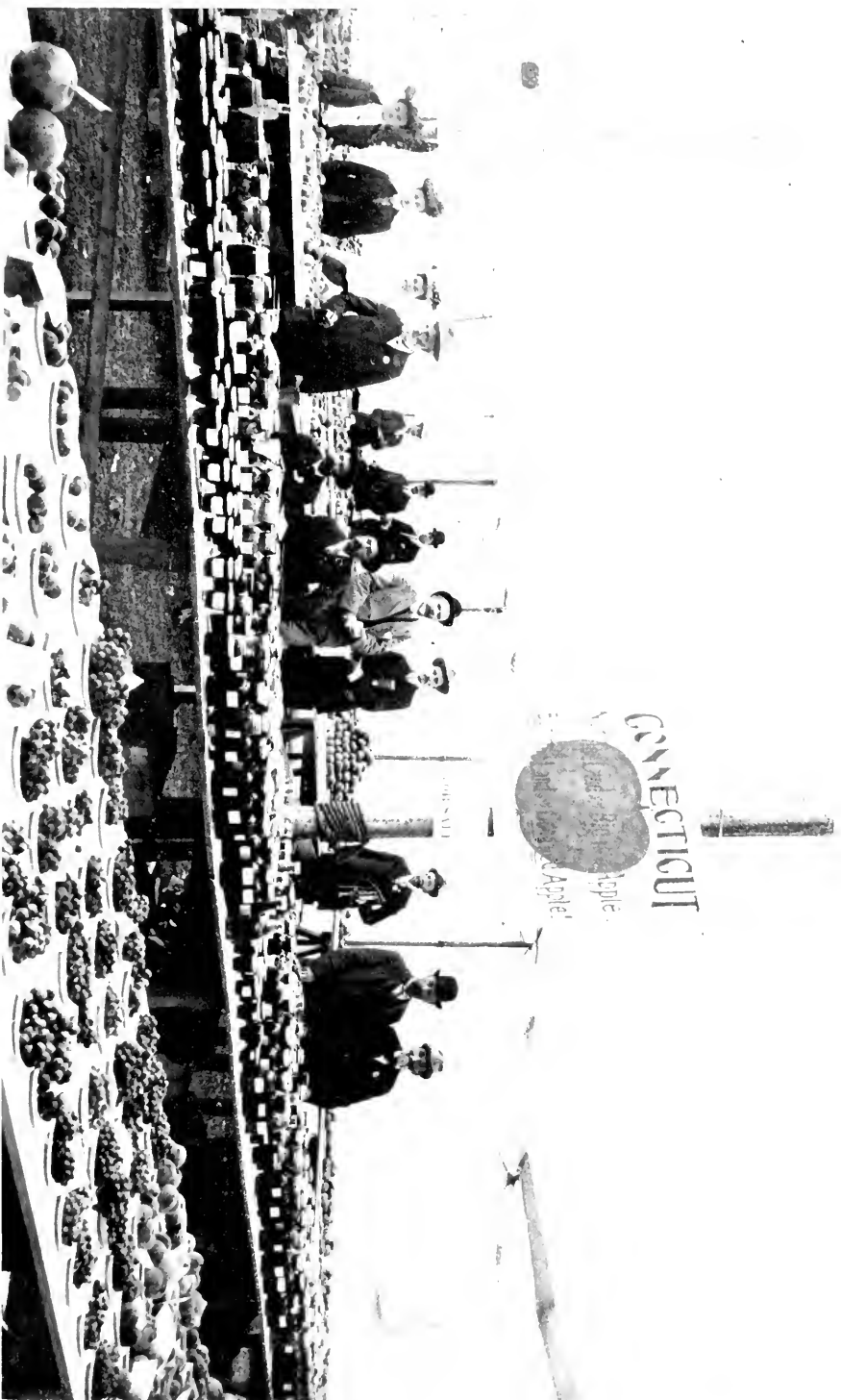


Plate VII.—View of the Interior of the Exhibition Tent, and a few of the Society's Leading Workers.—Rockville, September 27-29, 1904.

A large tent, 80x50 feet, was needed to accommodate the exhibit, and this space was completely filled with long tables. On these the plates of fruit were attractively staged under the direction of the exhibition committee and the officers. Plates VI and VII show something of how the big tent looked with the exhibits all in place. The number of exhibitors was sixty, and of these fifty-four received prizes, which amounted in all to \$398.75. Judging the exhibits was performed by the following expert fruit men: Apples—collections, Prof. A. G. Gulley; single plates, J. H. Hale and T. E. Cross of Poughkeepsie, N. Y.; Pears—collections and single plates, Prof. Gulley; Grapes, G. G. Tillinghast; Peaches, plums and quinces, Prof. E. R. Bennett; Apples in packages, E. Manchester; Canned fruits, jellies, etc., Chas. E. Steele, Mrs. N. S. Baldwin and Mrs. H. C. C. Miles; Nuts and miscellaneous exhibits, Prof. W. E. Britton.

A detailed list of the size and character of the various exhibits is given in the report of the exhibition committee on page 19.

One improvement might be suggested in connection with the exhibition, viz., to have the judging all performed by experienced men from outside the Society, and preferably from outside the state. This would bring in disinterested workers and give, we believe, more satisfactory results.

In conclusion, this important feature of the Society's work ought to receive the support of more of the members than it has yet had; more growers should contribute exhibits and more should make the effort to attend the exhibition. In no other way can so liberal a pomological education be gained. It offers exceptional opportunities to study varieties, types of fruits, methods of displaying them to best advantage, not to mention the financial returns in prizes that are bound to come to all who enter the competition. Ask any member who has been exhibiting from year to year if it *pays* and the answer will be strongly affirmative.

The Society, the state, and all who grow and love choice fruits have reason to feel proud of the Pomological Society's annual exhibitions.

Additional Papers Presented at the Annual Meeting.

Fungicides and Insecticides.

It is only about forty years since the crudest methods of spraying were practiced, and it is now one of the most important factors in fruit production, or any other branch of agriculture for that matter, as there are more insect and fungous diseases than there were a hundred years ago. There are four reasons why we are troubled more than formerly:

First, the clearing of the land has driven the insects onto cultivated plants.

Second, this change of living gave them more and better food, causing rapid increase of numbers.

Third, modern means of transportation have spread them from one end of the country to the other.

Fourth, this change of location has developed harmful tendencies, that is, an insect or a disease which may have been harmless in a certain locality may, by change of location, develop into a serious pest.

Fungicides are materials which are used to destroy fungi, or else as a preventative. Probably the most common fungicide is Bordeaux mixture. The fungicides are almost always used as preventatives rather than to destroy the disease after it is once started. In the case of most fungous diseases, while they may be checked by a fungicide, they are not eradicated. Take the case of the apple scab, by keeping a tree sprayed thoroughly all the season, the scab will not be present, but if the scab gains a foothold, while it may not spread much it will not be removed.

Insecticides are materials which are used to destroy insects. There are two types of insects; the eating insects, as the tent caterpillar, and the sucking insects, as the aphid. The former

can be killed by poisons such as Paris green, arsenic-salts, etc., and can be put on the plant before the insect appears, thus acting as a preventative.

For the sucking insects we must use something which will kill by contact, and the material can never be used as a preventative for that reason. Emulsions are usually used for the more tender ones and the lime, sulphur, salt mixture is used for the San José Scale, which is probably the most hardy one. Kerosene emulsion is made of soap and kerosene. The soap is dissolved in hot water and then the oil is added, and the mixture thoroughly churned for four or five minutes until the whole is a thick, milky mass. Upon cooling, this should be a thick, glutenous mass. Soap is an insecticide in itself, varying with the strength of the soap. Kerosene is also an insecticide, but it is so strong that it burns the plants and must be diluted. It will not mix with water, but by making an emulsion it can be used with water. The soap separates it and thus it is diluted in the water.

Many people think of Bordeaux mixture as an insecticide, but it is not. Why? Because it only contains lime and copper sulphate, and neither are present strong enough to kill or poison insects. But by adding Paris green or some other poison which will readily mix with the solution it may be used as an insecticide and fungicide. You have often heard this saying, "Never use an emulsion with Bordeaux." If you ask why not, you will probably be told they will not mix. This is not strictly true. Less than three years ago, up at the college, we put together normal solutions of Bordeaux mixture and kerosene emulsion and they mixed easily as far as we could see. There was no combination that prevented the use of the mixture in the pump, nor did the mixture quickly separate. But after standing for some time it separated, part settling, and probably it was the emulsion which rose to the top. After standing two or three days the mixture precipitated.

The reason why we never use an emulsion with a fungicide is that it is not necessary. At the time the fungicide is applied the insects may not be present, and it would be of no value at any other time.

Fungicides and insecticides are of little or no value for other purposes, except sulphur or some of its compounds, as sulphide of potassium. The lime, sulphur, salt spray does act both as an insecticide and fungicide.

Fumigation is another method of killing insects, and to be of any value the work must be done thoroughly.

S. B. Hollister.

How Domestic Varieties Originate.

It is popularly supposed by many people that the origination of new varieties is an easy matter. They suppose that it is a mere matter of getting the right seed, or of proper hybridization, but if they could know the weeks and years taken to originate some new variety, they would wonder how man possessed enough patience and courage to work it all out. The real origination depends upon chance, which is nature's way, and selection, which is man's. We will proceed to discuss them both.

1st. *Those which are the result of chance or freaks.* This is the source of most of the ordinary fruits, and up to the present time probably accounts for the origin of more varieties than the one of which I shall speak later. The original plant in this case is either a seedling or a bud sport. There is of course no certainty of the production of these original plants, and even when propagated by the gardener may not have the qualities requisite to that particular kind of fruit. For instance, if a peach grower should find a seedling bearing exceptionally good fruit, which stood shipping well, etc., he might possibly desire more trees of that nature and would go to work grafting or budding in order to obtain more, a very easy operation. Many new varieties are produced every year, some of which become valuable, but the greater part are found wanting and are soon discarded. Seedlings from the seed of one tree vary much even the first season, and from these seedlings many desirable varieties may be perfected by grafting or budding. The Elberta and "Belle of Georgia" peach were originally from seeds of the

same tree and planted the same season, showing how it is possible to fix new varieties by means of grafting.

We now come to the second method of production, varieties which originate by careful selection of breeding and are perpetuated by seed, as is the case with most vegetables. This second arrangement or method is much more difficult and requires something more than hands and eyes. It requires a knowledge of Botany and an intimate acquaintance with the subject you are working with. Selection may be a matter of hands and eyes requiring the attention of the gardener for years, picking out the typical fruit that he is working for. He must have clearly in mind the "type" that he is working for, and when he gets that "type" he has a rather serious problem before him yet, i. e., to hold that type where it is, and not to let it degenerate or vary. That it will vary is natural, and for this reason selection must be continuous.

Balanced against selection we have the other method of creating varieties, about which people have read and read until they think they know how to do it. I speak of "Pollination" and "Hybridization" and "Crossing." It is here that Botany is essential, and yet even Botany won't create a variety. Pollination is so uncertain that until we have positively proven that we have succeeded, success is very far away. Professor Bailey of Cornell University, who has practiced this method of producing new varieties for many years, reports that out of 312 efforts to pollinate he only had 89 successes—223 failures—and of the successful results not all of them produced seed. What seed was produced may not have given fruit like the original. The process is slow and takes years of time.

Now we have been talking about new varieties for quite a while and it probably occurs to someone that we have enough varieties now. Why do we want any more? A pretty good question and one very easy to answer. We don't want any more varieties, but we do want to improve the varieties that we have, to obtain a production that will be good in more ways than one. We want an apple that will not only be early but of high quality. We want one without a core, a seedless apple possibly. We want something better

than we now have. Some varieties deteriorate for various reasons and must be replaced. This has been the principal aim in putting forth new varieties and it has a very important significance to the fruit growers of the country. It means that better varieties of fruit and vegetables are going to be more common, and that the production of fruits must necessarily change for the better. *W. W. Ohlweiler.*

The Classification of Apples.

Apples may be classified in two different ways: the classification for use, and the classification of varieties for naming or study.

We will first take up the classification of apples for use. They may be separated into market, cooking, and dessert apples. A very few varieties may be placed in all three classes, of which the Northern Spy, and the R. I. Greenings are the most important. Most apples, however, go in but one class; many are not fit for any.

An apple for market purposes must be of good color (exception R. I. Greenings), fair size, not necessarily large, but even in size, a good shipper, that is, firm and a heavy bearer.

Cooking apples ought to be of good size; they should have a decided flavor, either sweet or sour. It does not matter whether they have bright color or not.

Eating or dessert apples must be of good quality, fine grained, good color, and mild and delicate in flavor. It does not matter about size.

The next classification of apples is for the study of varieties for naming. The classification usually used takes up, first, the season of ripening into summer, fall, and winter apples. An apple which ripens before the middle of September may be classed as a summer apple, those that ripen before the middle of November are fall apples, and all others are winter apples. Next in this classification comes that of flavor, that is, whether an apple is sweet or sour. Late in the season apples lose much of the distinctness of this characteristic.

Color is the next in order of classification. There are two divisions, self-colored and striped apples. Self-colored apples are those that have a solid color, but not necessarily covering the whole apple of the same color or shade. Striped apples are those where the dark colors are in distinct stripes or splashes.

In connection with this, apples may also be classified as to shape, but the shapes so merge into one another that it is often difficult to decide under which one an apple belongs. There are four shapes used: first, the flat apple; second, the conical or those that resemble a cone, wider at the base than in the middle; third, the round, and lastly, the oblong, or those that are longer than they are broad.

If one wishes to become a judge or classifier of apples, it is essential that he have a good memory, so that he may remember the most important points in well known apples; and an eye trained to note slight, yet permanent characteristics of the varieties that come to him for study.

R. G. Tryon.

Hotbeds.

A hotbed is a wooden box-like frame, covered with glass and receiving heat from the bottom. These beds are used for the forcing of early plants and vegetables.

The sash used are generally 3x6 without cross-pieces above the glass. The glass is laid slightly over-lapping the one below it.

The frames are made in sections to accommodate four sash; this makes the bed 12x6, 8x9 in front and 15 inches high in back. The work in building these frames is very simple. Take three twelve-foot plank twelve inches wide. From one of these saw a strip three inches wide and nail it onto the edge of another plank; this makes one plank nine inches wide, and the other fifteen; these are the front and back of the frame. Now, take your third plank and saw it in two, making two planks each six feet long; mark down three inches on one end of the plank and draw a line to the

center of the upper side of the board, saw this piece off and put it on the other end of the board. This makes the plank fifteen inches wide at the top and sloping to nine inches at the bottom; prepare a similar plank and your ends are ready. Fasten the planks together with bolts in the form of a box and put braces across every three feet to support the sash.

The bolts used are ten inched long, half inch in diameter. Take these to a blacksmith and have him knock off the heads, flatten the bolt for about six inches, leaving the thread the same, and have two holes bored through the flattened end of the bolt. These holes are made in order that the bolt can be screwed to the inside of the plank. The thread end of the bolt goes through the plank next to it and is fastened with a nut, making the frame solid.

The object of having these frames movable is because they will not be in use more than four or five months in the year, and by taking them in the frames will last twice as long.

The pit is now dug, which must be in a place well drained and sheltered from the wind. The drainage is of great importance, for in case the heating material should become thoroughly cooked, the bed would be spoiled for the season. The pit is dug $1\frac{1}{2}$ to 2 feet deep and large enough for the frame to sit on.

The heating material comes next. This is generally prepared from fresh horse manure mixed with about one-half its bulk of leaves or coarse litter. This mixture is piled square and flat and let stand for a few days until it begins to heat, it is then mixed thoroughly and piled again, taking care that the material which was outside first will be on the inside the second time it is piled. In a few days the pile will be heating evenly and it is then ready to put into the pit, where it must be evenly spread and well packed. The depth of the manure depends on the time of the year and the length of time you require heat. If you start your beds in February, two feet of manure will be necessary; but, if started in March, one foot is plenty.

As soon as the manure is in the pit, five or six inches of fine compost loam are put on top of the manure, the sashes are put on and the bed is allowed to warm.

When the heat of the bed has become uniform at about 70 to 80 F., the seeds may be planted, and, in case of the lettuce plants, should be ready for sale in about six weeks.

In the winter it is necessary to have some protection for the beds by means of shutters or mats. The shutters are simply half-inch boards fastened together so as to cover a sash. The mats are made of straw, jute, and waste cotton, being $4\frac{1}{2} \times 7$, two of them covering three sash.

The ventilation of the beds is of importance, as without it the beds are likely to become too hot and scorch the plants. To avoid this raise the lower edge of the sash. The raising of the lower edge of the sash makes the bed cool gradually, as the greater amount of heat is in the upper side of the bed.

The expense for a complete hothed of four sash, or large enough for most family gardens, would be about from \$3 to \$4 for the frame and \$10 to \$12 for the glazed sash, or a total of from \$13 to \$15.

The frames with ordinary care will last from ten to twelve years, the sash longer, and the glass until it is broken.

D. J. Miner.

Grafting.

Among the different methods of propagation in common use by the horticulturist, one of the most ancient and perhaps the most used, is grafting. Grafting is a method of propagating plants, especially trees, in which a cutting, or scion, from a young growth of the variety desired is fitted and placed upon a root or branch with root attached, which is used as a stock for the scion to grow on.

Grafting is used for a number of different purposes. A grafted or budded tree is almost certain to produce fruit true to name, or the same variety that is set. Seedling trees, on the other hand, seldom or never produce fruit bearing any resemblance to the tree or fruit from which the seed was taken. Then again, by grafting, the time in which the tree will produce fruit will be much shortened. Grafting is used in some cases to produce dwarf trees, which are used where

space is to be economized or where quality is desired regardless of quantity. It is used in some special cases to adapt a tree to growth on certain soil, as, for instance, the peach grafted on a plum root will grow better on clay soil than if growing on its own roots. The process of grafting is limited to varieties of the same or similar species, and in a few cases to different genera. Thus the peach would not be grafted to an apple, or vice-versa. Of course it goes without saying that only healthy trees or plants should be used in grafting.

To obtain success in grafting it is necessary that the work be done carefully and thoroughly. Few tools are necessary for the work, a sharp knife of approved form being sufficient for most light wood. In working on larger wood the knife is supplemented by a saw and sometimes by grafting chisels. The principal thing is to secure a perfect union of the growing parts of stock and scion, and then to cover the union carefully so as to keep air and moisture away from the graft. For this purpose grafting wax is commonly used. This is usually made by putting in a kettle four parts by weight of rosin, two parts beeswax and one part tallow. These are boiled one-half hour, or until the rosin is well dissolved. The mixture is then thrown into cold water and pulled like molasses candy as soon as it can be handled.

The scions used in grafting are usually cut late in the fall from one year old wood. They are then labelled carefully and packed in sawdust or sphagnum moss to keep them moist, and stored over winter in a place where the temperature is even and preferably not lower than freezing. They are not hurt by freezing, but repeated freezing and thawing will weaken the vitality of the scions.

Grafting is divided into three branches, dependent on the methods used. These are bud grafting, scion grafting, and inarching. The first two are the ones most generally used by the horticulturist, inarching being used only in special cases where it would not be safe to use the bud or scion methods.

Some of the most common methods of scion grafting, according to the manner in which the stock and scion are

joined, are splice, tongue or whip, veneer, cleft, crown, and saddle grafting. Of these methods a little description may be in order.

The splice graft is made by simply cutting the stock and scion slantingly and tying the two, covering the joint with wax. The veneer graft is used on pithy wood which can not be cut into. A slight layer is cut from one side of both stock and scion. The growing parts of each are then placed in contact and the whole tied with waxed string and paper.

The cleft is used almost wholly in top grafting. That is, when it is desired to graft young wood of one variety on to the top of an old tree. In this work the stock is usually two inches in diameter, while the scions, of which two are commonly used, are less than one-half inch in diameter. The stock is split with the grafting chisel and the scions cut wedge-shape and put one each side of the cleft with their cambium or growing layers in contact with that of the stock. The whole joint is then very carefully waxed over to keep out moisture.

Crown grafting is often used for the same purpose as the cleft, especially when it is not desired to split the stock. The scions are cut with a shoulder having a very thin piece of wood below it. The bark of the stock is then split down a short distance and the scion set under the bark, so that it bears against the growing layer of the stock.

The Saddle graft is sometimes used when the scion is of larger size than the stock. The scion is cut with a V-shaped base to set on the top of the stock, which is made wedge-shaped to receive it. The joint is tied and waxed like the other methods.

The graft which is used almost wholly by nurserymen in propagating apple and some other fruit trees, is what is known as the whip or tongue graft. By this method the scions of the variety it is desired to propagate are grafted to pieces of one year old roots of seedling trees.

The operation, which I will now demonstrate, is as follows: The scions are cut four inches long, with the lower end slanting and having a cut downward from the slant parallel with the bark. The roots are cut in like manner, but only

three inches long, being first trimmed of all side rootlets. The stocks and scions are then fitted together and tied with waxed string. These grafts, in regular nursery work, are usually made in a graft shop during the winter months and stored in damp sawdust until they can be planted in the spring. By that time, a callus will have formed about the stock and scion where they are joined, and the plant will soon start roots and develop a healthy growth if the grafting has been properly and carefully done. This same method is often used for top grafting young trees in nursery work.

J. H. Desmond.

Germination of Seeds.

To a great extent all gardeners and vegetable growers are dependent upon the germination of seeds for the success they have in plant raising.

If seeds do not have vitality enough to germinate after planting, the grower may lose several days in using them; thus it is wise for him to test his seeds before planting. One method for testing his seeds is by counting out one hundred and sowing them in drills in a shallow box of fine loam kept at an average temperature of from 65 degrees to 80 degrees. The box should then be covered with glass to prevent rapid evaporation. After the seedlings have come up, by counting them the per cent. of germination of the seeds is easily obtained. Another simpler method, and perhaps easier and quicker, is to take two plates and in one place a piece of cloth,—woolen, if convenient, as it holds moisture better—wet it and press out the surplus water, leaving it damp. Place the counted seeds between the folds. Then place the other plate over it and keep the temperature as formerly stated. Another point is to notice the sprouts of the seedlings, whether they are weak or not. If they are weak, which is apt to be the case of too old seed, they should not be used as they will not grow out of doors.

Many seeds have the power of holding their vitality for long periods of time, some as long as ten or twelve years, such

as the cucumbers; others, like the bean, corn, onions, etc., will retain life but two or three years. This difference varying somewhat according to the way they are harvested and stored and to the class of seeds, whether oily or starchy, the starchy lasting the longer. If the seeds are gathered while unripe and are poorly ventilated while being cured, they are apt to sprout or mould, either of which seriously injures and lessens the vitality. Many of the tropical seeds, if frozen before they are dry, will often be destroyed. As an illustration, take corn; if the seed is not cured well and it is frozen and becomes mouldy, it will when planted nearly always fail to grow, while corn from the same crop, properly cured, will hardly ever fail to germinate and live. This leads us to know what is the proper way of curing and storing of seeds.

Seeds are much influenced by the temperature and humidity of the atmosphere in which they are stored; therefore, a dry place with an even temperature are the necessary conditions for keeping seeds in the best form. For tropical plant seeds, the warmer the atmosphere the better. The temperature and conditions of a living room is ideal for storing.

The length of time it requires seeds to germinate depends mostly upon the temperature and moisture of the soil. If the soil is damp and cold, or at a temperature below 50 degrees, the seeds will germinate very slowly, if at all. If the soil be damp and hot, or having a temperature of 65 degrees to 80 degrees, they will germinate in the quickest time possible, varying much with the kind of seed.

The size of the seed has nothing to do with the length of time it takes for germination, as the radish and the bean require about the same amount of time, while one is small and the other large. Another important fact to know is that some seeds grow better if placed in the right position in the soil, as, for instance, seeds that have large seed leaves, like the lima beans; these are better to have the eye placed downward, or the seed may germinate and die, as the body of the bean is unable to come to the surface of the ground.

The depth that they should be planted varies with the different kinds of seeds and the conditions of the season. A depth of one-half to one inch is generally sufficient. If the

season is *dry* and *hot*, they should be planted deep; while if it is *damp* and *hot*, a little soil covering them is all that is necessary to start germination. Some will even start if just thrown on to the surface of the soil and protected from the sun, as in the case of the celery.

Another point, before closing, is that seeds botanically related usually require about the same conditions. The cucumbers, squashes, melons, etc., need about the same treatment. The cabbage and the radish, both of which are in the same order, will come up if planted in cold weather, while those of a different botanical order, like the tomatoes and peppers, will not start in the same conditions as the latter, but require a great deal of heat.

C. J. Grant.

Connecticut Fruits at the St. Louis Exposition.

At the request of the Exposition Commission from Connecticut, the Pomological Society took charge of the State's Fruit exhibit at St. Louis in 1904.

Accordingly a committee was appointed consisting of the President, Prof. A. G. Gulley of Storrs, the Secretary, H. C. C. Miles of Milford and the Treasurer, R. A. Moore of Kensington, to plan for and carry out the work of collecting and maintaining a display of the various fruit products of Connecticut. The sum of \$4,000 was appropriated by the State for this department.

During the fall of 1903 110 barrels of apples and a small lot of other fruits were procured and placed in cold storage in Hartford. This fruit was obtained from about twenty-five growers in various parts of the state in lots varying from one to twenty barrels. The stock passed through the winter in good condition and early in March was sent to St. Louis and again stored until needed for display. The committee planned to make the whole exhibit of fresh fruit—that is, none to be shown except in the natural state—which required enough of the crop of 1903 to last until that of 1904 was available.

The exhibit occupied about 800 square feet in section 18. The Horticulture Building, where only low instllation was allowed, proved to be a very desirable location, being open and airy and very accessible from all parts of the hall. This position also very materially decreased the expense of the installation. The exhibit was opened the first day of the fair, April 30, and was one of the very few states in the hall that had the tables fully occupied the opening day of the exposition.

The display, largely of apples, but including pears and cranberries, was kept up from the stock in storage, using from five to ten barrels per week, until about the middle of July, when the first apples of 1904 crop and also some small

fruit were forwarded, with regular supplies later. But it was about September 15 when the storage stock was entirely closed out and the tables wholly supplied direct from the crop of 1904, and from which a display of great credit to the state was continued until the close of the exposition, December 1st.

During the season all cultivated fruits grown in the state, except raspberries and blackberries, were shown; nearly all the tender fruits were sent in large quantities and usually arrived in satisfactory condition. It was supposed at the opening that apples and pears only would be used in the exhibit, but a trial shipment demonstrated that the finer fruits could be sent and consequently they were used freely in this season.

The display, after being installed by the chairman of the committee in charge, was left in the general care of representative men of the society and state, who changed about once each month, while an assistant was continually with the exhibits, thus having one present all the time who understood the routine work, and one to act as the state and society representatives. The latter received no pay other than the expense involved in the time employed, and it proved a very satisfactory method of handling the exhibit.

The fruit obtained in 1903 was from the following growers: E. Manchester, Bristol; L. S. Abbe, Hazardville; Jos. Albiston, South Manchester; J. E. Andrews, New Britain; H. O. Averill, Washington; F. H. Beers, Brookfield; Connecticut Valley Orchard Co., Berlin; Connecticut Agricultural College, Storrs; Dennis Fenn, Milford; Thomas Gilbert, Middletown; S. A. Griswold & Bro., West Hartford; A. G. Gulley, Storrs; E. M. Ives, Meriden; E. B. Lathrop, Rockville; J. Moss & Son, West Cheshire; J. H. Merriman, Southington; Maxwell Bros., Rockville; A. E. Plant, Branford; Root Bros., Farmington; H. E. Savage & Sons, Berlin; Harry Sedgwick, Falls Village; G. W. Staples, Hartford; L. Stoughton, East Windsor Hill; J. L. Watrous, Meriden; J. M. Whittlesey, Morris.

The fruit from these parties consisted of apples, except some pears from the Agricultural college and cranberries from Maxwell Bros.

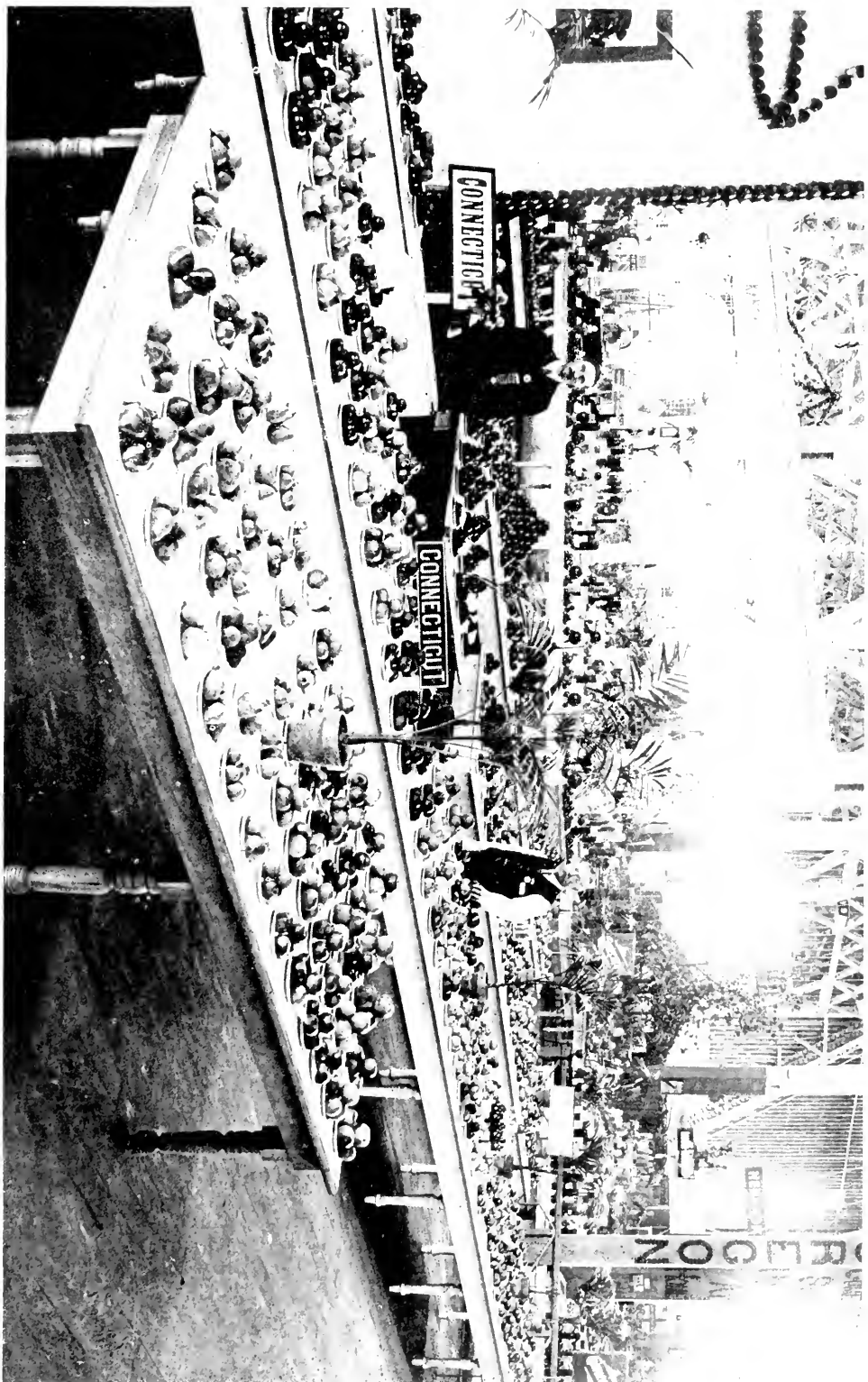


Plate VIII.—The Connecticut State Exhibit of Fruits at the St. Louis Exposition.

Connecticut was the only New England State making a continuous display.—Photographed October 15, 1904

Several of these persons furnished more in 1904, but in addition pears, peaches, plums and grapes were received in large lots from C. I. Allen, Terryville; J. H. Hale, South Glastonbury; J. M. Hubbard, Middletown; A. Kingsbury, Coventry; C. H. Savage, Storrs; W. T. Thomas, Groton; E. C. Warner, Clintonville, and W. A. Warren, Rockville. A few small lots were received from parties not known.

A notable addition to the exhibit was the large quantity of choice fruit sent from the Annual Fall Exhibition of the Pomological Society, which reached St. Louis about October 1st. This included apples, pears, grapes, quinces, plums and a few nuts, furnished by various growers in every section of the state, and was a thoroughly representative display.

The entire exhibit from first to last was a splendid one and reflected great credit on the "Nutmeg State," while, of course, no attempt was made to match the mammoth displays of many of the larger western states, yet in *quality* the Connecticut fruits were easily superior to that from most sections, and the fact that our state was the only one in New England having a continuous fruit exhibit at the Fair, was worthy of special mention.

The following well-known Connecticut men were in charge of the exhibit at St. Louis during the Fair: Prof. A. G. Gulley, Storrs; J. M. Hubbard, Middletown; J. H. Merri- man, Southington; C. H. Savage, Storrs; J. C. Eddy, Sims- bury; H. C. C. Miles, Milford; G. F. Platt, Milford, and G. C. Comstock, Norwalk.

The total expense of the exhibit was as follows:

Cost of fruit and collection, 1903	\$491.22
Cold storage in Hartford	51.60
Outfit for space at exposition	480.72
Expense of installing, including freight	248.82
Superintendents in charge	725.00
Assistants	465.00
Express paid	243.35
Labor collecting fruit, 1904	116.60
Cost of fruit, 1904	112.25
Storage and cartage in St. Louis	40.00
Incidentals, printing, postage, etc.	36.50
Total	<hr/> \$3,011.06

Since the Exposition closed and the complete list of awards in the Horticultural Department has been announced, it is learned that Connecticut exhibitors came in for a share of the honors, as the following list will show. Most of our fruit was entered for competition and the results, considering all things, is gratifying.

State of Connecticut, general exhibit of fruits and nuts.	Gold medal
Connecticut Pomological Society, general collection	
of fruit	Gold medal
Connecticut Agricultural College, Storrs, fruits	Gold medal
Dennis Fenn, Milford, apples	Silver medal
E. M. Ives, Meriden, apples	Silver medal
J. H. Merriman, Southington, apples	Silver medal
H. E. Savage, Berlin, apples	Silver medal
E. C. Warner, North Haven, pears	Silver medal
J. M. Whittlesey, Morris, apples	Silver medal
Connecticut Valley Orchard Co., Berlin, apples	Silver medal
J. H. Hale, South Glastonbury, peaches	Silver medal
J. M. Hubbard, Middletown, pears	Silver medal
C. I. Allen, Terryville, grapes	Bronze medal
J. E. Andrews, New Britain, apples	Bronze medal
E. Manchester, Bristol, apples	Bronze medal
Maxwell Bros., Rockville, cranberries	Bronze medal
J. L. Watrous, Meriden, apples	Bronze medal

Some Notes on Apples at the St. Louis Exposition.

By G. C. COMSTOCK, Norwalk.

During the month of November, 1904, the writer was in charge of the Connecticut fruit exhibit at the Exposition, and while there was able to gather much interesting and useful information in regard to the apple industry of the United States and Canada.

Having sufficient time for the purpose the writer went about among the various exhibits of apples and other fruits in the Palace of Horticulture and interviewed each superintendent or commissioner who was in charge of the interests of the several States and Territories and Canada.

This question was asked of each one. "Which five varieties of apples do you consider the best in your state or locality, both from a commercial and quality standpoint?"

The diversity of expert opinions thus elicited and expressed as a result of this questioning has been tabulated, and forms a rather unique report. Believing that the list may be of some interest and value to Connecticut apple growers, as indicating the leading commercial sorts that are being planted the country over, it is given here.

As will be noted in this list Connecticut was the only New England State having a fruit exhibit, and a number of the other apple-growing states were not represented at the Fair. The table appended embraces a list of thirty-eight varieties of apples, these being the favorites in twenty-three states, two territories, and the Dominion of Canada. In a few cases, where it was difficult to decide on just five varieties, six were allowed.

Minnesota.....	Ben Davis
Washington.....	Grimes
New York.....	Jonathan
Colorado.....	Minesap
Idaho.....	Arkansas Blk.
Michigan.....	Wealthy
W. Virginia.....	York Imperial
Wisconsin.....	Baldwin
Iowa.....	N. W. Greening
Nebraska.....	Winter Pearmain
Kansas.....	Rome Beauty
Texas.....	Yellow Bellefeur
Virginia.....	Northern Spy
Montana.....	Mammoth Black Twig
New Mexico.....	R. I. Greening
Illinois.....	Esopus Spitzenburg
Missouri.....	Duchess
Arkansas.....	Newtown
Ind. Territory.....	King
Oklahoma.....	Gano
Oregon.....	Mo. Pippin
California.....	Rox. Russett
Tennessee.....	Sutton
Connecticut.....	20-Ounce
Canada.....	Yellow Transparent
	Red Canada
	McMahon
	Longfield
	Bledsoe
	Albermarble Pippin
	Alexander
	Genitan
	Willow Twig
	Indiana Favorite
	Shuman
	Langford Seedling
	Paragon
	McIntosh

In conclusion we might cite a few of the many wonderful features in the Palace of Horticulture at the Exposition.

Missouri had an exceptionally large and fine display of apples. Some extra large Wolf River were shown. One specimen, weighing thirty-three ounces; one of N. W. Greening, 27 ounces. Oregon's exhibit of apples was said to be the finest seen, noticeably the Hood River exhibit of some 160 bushel boxes of magnificent fruit, which came in about November 10th. This was all packed in a very attractive manner, and of very high quality. Arkansas showed twelve pears, net weight, 24 pounds, taken from one Keiffer tree. Iowa had some very large and fine Wolf Rivers of very light color. The reason of this was, as stated, they were "pulled" early. In the West apples are "pulled," not picked. Washington showed the largest apples ever seen, both in Horticulture and their State building. One variety, "Spokane Beauty," a single specimen of which weighed forty ounces, and five of them weighed 184 ounces. Illinois had a very large exhibit of fine apples. A striking motto, suggestive of the real value of an apple diet, was in large letters, affirming that "an apple a day keeps the doctor away." The commissioner from Virginia gave the information that a twenty-acre orchard in that state, of Albemarle Pippins, in 1903 netted the owner \$10,000. New Mexico has an orchard of 700 acres in apples. One grower in that state has twenty acres of "Genitan" apples, and would not grow any other. The "Colorado Coreless and Seedless apple" attracted much attention and was one of the greatest novelties seen in the fruit line.

Canada's exhibit ranked very high, especially in quality and the attractive color of her apples.

Altogether the Horticultural display afforded a rare opportunity to observe and study the fruits of many sections of the country.

Necrology.

Since the last report was issued nine members have been taken from our list by the grim hand of Death.

LEWIS J. WELLS of *Woodstock*: Mr. Wells was one of the best known farmers of Windham County, an extensive apple grower and dairyman. He had been secretary of the State Grange and a member of the Board of Agriculture, a man respected by all.

W. E. GOODWILL of *Southington*: A member of the society since 1903.

LEVI S. WELLS of *New Britain*: A veteran farmer and grange worker, always zealous in his efforts for the uplifting of agriculture.

CHARLES LEIGEY of *Berlin*: Mr. Leigey was a native of France and brought to this country his experience and love for the culture of grapes. On his farm he made a specialty of this fruit and was one of the very few in the state who have profitably engaged in viticulture and the making and selling of wines. He was for many years a very active member of the Society and did much for its welfare. As he was seldom absent from its meetings, his loss is all the more keenly felt. We shall miss his genial face and kindly word.

F. H. WHEELER of *Middlebury*: A member since 1902.


A. C. PECK of *Cheshire*: One of the oldest, yet one of the most interested members of the Society. Mr. Peck became a member in the early years of the Society and was deeply interested in fruits as an amateur. A man whom all loved and respected for his uprightness of character.

JOHN R. PLATT *of Prospect*: A veteran fruit grower and a member of the Society for many years.

GEORGE O. JACKSON *of Colchester*: For many years sheriff of New London County, who also combined fruit growing with his other business interests. He had been identified with the Society since 1899.

EDWARD F. GAYLORD *of Bristol*: In the death of Mr. Gaylord the Society sustains a severe loss. While not directly engaged in fruit growing, yet he always showed a great interest in pomological matters and was an active supporter of the Society in all its work. Prominent in Grange affairs for many years, a successful farmer and business man, respected by all his associates, his sudden death leaves a deep impression of grief and sadness.

Not since the formation of the Society have we been called upon to record the loss of so many valued members in one short year. We take this opportunity to express our deepest sympathy for their sorrowing families, whose loss is even greater than our own, and to commend them to the loving care of the all-wise Father "who doeth all things well."



LIST OF MEMBERS†

OF THE

CONNECTICUT POMOLOGICAL SOCIETY

1905.

- Abbe, Linden S., Hazardville.
 Abbey, Mrs. Chas. Pelton, Portland.
 Abbott, Arthur J., Woodbury.
 Albiston, Joseph, So. Manchester.
 Albiston, James H., So. Manchester.
 Allen, Chas. D., Cheshire.
 Allen, Chas. I., Pequabuck.
 American Horticulture Distributing Co., Martinsburg, W. Va.
 Andrews, Cornelius, New Britain.
 Andrews, J. E., New Britain.
 Andrews, Miss Hattie C., New Britain.
 Anthony, Wm. E., Southington.
 Ashton, Frank B., Middletown.
 Ashton, Mrs. F. B., Middletown.
 Atkins, T. J., Middletown.
 Atwater, B. H., Berlin.
 Atwater, Edwin B., New Haven, Box 207.
 Atwater, E. B., Plantsville.
 Atwood, C. B., Watertown.
 Atwood, Oscar F., Brooklyn.
 Atwood, Rev. E. F., Hartford, 670 Garden St.
 Austin, Franklin B., Norwalk.
 Averill, H. O., Washington Depot.
 Ayer, Robert E., Unionville.
 Ayer, W. Y., Saybrook.
 Babcock, G. P., Tolland.
 Bacon, Eben W., Middletown, R. F. D. No. 1.
 Bacon, Mrs. Eliza M., Scotland, *
 Bailey, F. B., Durham.
 Baker, C. H., Andover.
 Baldwin, Walter H., Cheshire.
 Barber, Henry A., Danbury.
 Barber, Joseph, Rockville.
 Barber, Mrs. Joseph, Rockville.
 Barker, N. C., Labanon.
 Barnes, A. G., New Milford.
 Barnes, Edward H., New Haven.
 Barnes, Erva L., Norwich, R. F. D. No. 3.
 Barnes, J. Norris, Yalesville.
 Barnes, John R., Yalesville.
 Barnes, Morris A., Collinsville.
 Bass, Lucien, Willimantic, R. F. D. No. 2.
 Bassett, George E., Clintonville.
 Beach, A. S., Bridgeport, R. F. D.
 Beach, Frank H., Stratford.
 Beach, G. S., Winsted.
 Beach, J. H., Branford.
 Beach, Z. P., Wallingford.
 Beckwith, G. C., Nepaug.
 Beckwith, W. M., Nepaug.
 Beebe, C. C., Wilbraham, Mass.
 Beers, F. H., Brookfield Centre.
 Beisiegel, Jacob, Woodbridge.
 Beman, W. L., Bloomfield.
 Benham, Leonard M., Highwood.
 Benham, Wilbur H., Highwood.
 Bennett, E. R., Storrs.
 Bernhard, Albert, Meriden.
 Bidwell, A. F., Canton Center.
 Birdseye, E. B., Middletown.
 Birdsey, E. T., Middletown.

†This list is corrected to June, 1905.

- Birge, E. C., Westport.
 Bishop, Jared, Cheshire
 Blair, Cyrus H., New Britain.
 R. F. D. No. 2.
 Blaisdell, M. L., Clinton.
 Blakeslee, Arthur A., Wallingford.
 Bliss, Ethelbert, Ludlow, Mass.,
 R. F. D.
 Bliven, J. B., New London.
 Boardman, F. E., Middletown,
 R. F. D.
 Bogart, Geo. A., Chester.
 Bogue, Nelson, Batavia, N. Y.
 Bowers, Arthur E., Manchester.
 Bradley, E. L., Norwalk.
 Bradley, F. N., Derby.
 Bradley, Miss Gertrude A., Waterbury.
 Bradlev, Mrs. Sarah, Bristol, R.
 F. D.
 Bradley, Simon C., Greenfield Hill.
 Brainerd, M. N., Southington.
 Brewer, C. S., Hartford.
 Bridge, H. J., Hazardville.
 Brinsmade, W. H., Bridgeport,
 R. F. D. No. 4.
 Bristol, George B., Middlebury.
 Britton, Prof. W. E., New Haven.
 Brockett, Howard R., Bristol.
 Bronson, N. S., New Haven.
 Brooks, Geo. H., Clinton.
 Brown, G. F., Cannon.
 Brown, T. L., Black Hall.
 Brownson, S. B., Shelton.
 Brundage, Benj., Danbury, R.
 F. D. No. 20.
 Brundage, C. H., Danbury, R.
 F. D. No. 20.
 Buck, J. S., Wethersfield.
 Buell, H. B., Eastford.
 Burdick, A. B., Norwich, R. D.
 Burnham, T. H., Bloomfield.
 Burr, C. R., Hartford.
 Burr, Eugene O., Higganum.
 Burr, W. H., Westport.
 Bushnell, Huber, Berlin.
 Bushnell, Mrs. Huber, Berlin.
 Butler, George E., Meriden.
 Butler, George S., Cromwell.
 Butler, Hezekiah, Wethersfield.
 Callahan, Thos., Newington.
 Camp, David N., New Britain.
 Carter, Geo. S., Clinton.
 Case, Edmund E., New Britain.
 Chambers, Fred'k., Waterbury.
 Church, Foster P., Higganum.
 Churchill, Stephen, Wethersfield.
 Clark, Arthur F., Higganum.
 Clark, Frank T., Beacon Falls.
 Clark, George M., Higganum.
 Clark, H. E., Middlebury.
 Clark, O. R., Higganum.
 Clarke, D. N., Westville.
 Clinton, E. B., Clintonville.
 Clinton, Dr. George P., Expr.
 Station, New Haven.
 Clinton, Prof. L. A., Storrs.
 Close, Albert W., Greenwich.
 Cobb, F. S., West Norfolk.
 Coe, C. W., Durham Center.
 Coe, Ernest F., Edgewood Ave.,
 New Haven.
 Coe, Harry S., Waterbury.
 Coe, W. T., Northford.
 Colby, Benj. F., Kensington.
 Coleman, M. L., Seymour.
 Coleman, M. P., South Coventry.
 Colton, F. B., Hartford.
 Comstock, C. L., Danbury, R. D.
 No. 20.
 Comstock, G. C., Norwalk.
 Conklin, Roland R., Huntington, L. I.
 Conn, Agricult. College, Storrs.
 Cook, Allen B., Farmington.
 Cooke, Marcus E., Wallingford.
 Cook, S. G., Branford.
 Copley, Wm. E., Hazardville.
 Cornwall, W. W., Kensington.
 Cowles, Percy, Farmington.
 Cowles, W. W., Buckland.
 Cross, T. E., Poughkeepsie, N. Y.
 Crowell, David A., Middletown.
 Crowell, L. L., Middletown.
 Cuneo, Joseph, Meriden.
 Curnow, Wesley, Cheshire.
 Curtis, Carlos W., Plantsville.
 Curtis, H. B., Cheshire.
 Curtis, Mrs. H. B., Cheshire.
 Curtis, Newton M., Sandy Hook.
 Curtis, Robert W., Stratford.
 Daniels, H. O., Middletown, Box
 646.
 Daniels, James E., Middletown,
 Box 646.
 Dann, F. M., New Haven, 280
 Ferry St.
 Dart, C. O., Vernon Center.

- Davis, A. B., Rockville.
 Davis, Chas. T., Middletown.
 Davis, E., Branford.
 Davis, Richard, Middletown.
 Dearden, Greenwood, Tolland.
 DeBisschop, Charles, Marion.
 DeMauriac, P. O., Hartford.
 care Aetna Ins. Co.
 Deming, Chas. J., Litchfield.
 Deming, H. P., Robertsville.
 Denny, Geo. W., No. Branford.
 Dewhurst, E. W., Bridgeport, R.
 F. D. No. 7.
 Dickinson, W. L., South Britain.
 Dimon, J. J., Hartford.
 Donalds, E. J., East Canaan.
 Doolittle, Arthur H., Bethany.
 Doolittle, F. W., Milldale.
 Doolittle, H. M., Meriden.
 Doolittle, S. B., Wallingford.
 Douglass, G. F., Collinsville.
 Dowd, Frank C., Madison.
 Downs, W. S., Derby.
 Duffie, C. R., Bantam.
 Dunham, H. C., Middletown.
 Dyer, E. W., Berlin.
 Eddy, J. C., Simsbury.
 Eddy, John S., Unionville.
 Eddy, S. W., Simsbury.
 Ellis, W. L. L., Ansonia.
 Ellsworth, E. J., Windsorville.
 Ellsworth, Frederick, Hartford.
 Elton, H. L., Waterbury, R. F.
 D.
 Elwood, J. F., Greens Farms.
 Emily, Chas. H., Moodus.
 Emmons, F. A., East Canaan.
 Ennis, R. H., Hampton.
 Ensign, F. Howard, Silver Lane.
 Faber, W. A., Waterbury, R. F.
 D.
 Fagan, Joseph A., Forestville.
 Fairchild, H. L., R. D. No. 4,
 Bridgeport.
 Farnham, A. N., Westville.
 Fawthrop, Walter, Cromwell.
 Felt, Dr. E. P., Albany, N. Y.
 Fenn, Benj., Milford.
 Fenn, Dennis, Milford.
 Fenn, Robert M., Middlebury.
 Fisher, A. C., Boston, Mass., 40-
 42 Commercial St.
 Flight, S. A., Highwood.
 Forbes, J. S., Burnside.
 Foster, Sylvester M., Westport.
 Fowler, W. E., Clintonville.
 Francis, D. G., West Hartford.
 Francis, J. H., Meriden.
 French, W. H., Wolcott.
 French, Mrs. W. H., Wolcott.
 Frisbie, Martin M., Southington.
 Frisbie, M. W., Southington.
 Frost, Frank M., Yalesville.
 Frost, Willis E., Bridgewater.
 Fuller, Wm. H., West Hartford.
 Fuller, Mrs. Wm. H., West
 Hartford.
 Gallagher, J. F., Waterbury, R.
 F. D.
 Gardner, B. L., Wallingford,
 R. F. D.
 Gardner, I. I., Meriden.
 Gardner, J. W., Cromwell.
 Gardner, R. H., Cromwell.
 Garrigus, H. L., Storrs.
 Garrigus, Lewis, Waterbury, 28
 *Gaylord, E. F., Bristol.
 Gaylord, E. W., Bristol.
 Gaylord, Herman J., Gaylords-
 ville.
 Geer, Everett S., Hartford, 64
 Niles St.
 Gehring, Fred., Rockville.
 Gelston, J. B., East Haddam.
 Gilbert, Azel E., Middletown.
 Gilbert, Henry, Middletown.
 Gilbert, Josiah, Wilton.
 Gilbert, Mrs. Orrin, Middletown.
 Gilbert, Orrin, Middletown.
 Gilbert, Thomas, Middletown.
 Gold, C. L., West Cornwall.
 Gold, T. S., West Cornwall.
 Goldsborough, H. H., Eagleville,
 R. D.
 *Goodwill, W. E., Southington.
 Goodwin, Francis, Hartford, 783
 Main St.
 Goodwin, H. H., Cheshire.
 Gould's Mfg. Co., Seneca Falls,
 N. Y.
 Greene, Prof. W. J., Wooster, O.
 Griffith, Geo. H., Bristol.
 Griffith, Wm. J., Bristol.
 Griswold, Henry H., Guilford.
 Griswold, H. O., West Hartford.
 Griswold, J. B., Newington.
 Griswold, R. S., Wethersfield.
 Griswold, S. A., West Hartford.
 Griswold, S. P., West Hartford.
 Griswold, Thomas & Co., South
 Wethersfield.
 Griswold, W. F., Rocky Hill.
 Groesbeck, F. O., Hartford.
 Gulley, Prof. A. G., Storrs.

- Hale, George, Westport.
 Hale, G. H., South Glastonbury.
 Hale, J. H., South Glastonbury.
 Hale, Moseley, South Glastonbury.
 Hale, Stancliff, South Glastonbury.
 Haley, E., Mystic, R. F. D.
 Hall, Chas. H., Cheshire.
 Hall, Geo. B., Moodus.
 Hall, G. D., Wallingford.
 Hall, G. H., Manchester.
 Hall, W. E., Wallingford.
 Hall, Wilbur H., Wallingford.
 Halladay, Edmund, Suffield.
 Hannah, W. L., Bristol.
 Hardy, Alfred, Rockville.
 Harrison, Orlando, Berlin, Md.
 Hart, Ernest W., Forestville.
 Hart, E. S., Plainville.
 Hart, G. W., Unionville.
 Hart, Mrs. S. A., Kensington.
 Harvey, C. F., Woodbury.
 Harwood, B. E., Chester.
 Haskins, L. O., Scotland.
 Hatch, Gilbert H., Whigville.
 Healey, E. M., Plainville.
 Henry, Hon. E. S., Rockville.
 Henry, J. L., Manchester.
 Higgins, Wm. L., M.D., South Coventry.
 Higgins, Wm. W., Maywood, N. J.
 Hill, Samuel B., West Cheshire.
 Hilliard, H. J., Portland.
 Hills, T. Morton, M.D., Williamantic.
 Hinman, R. S., Stevenson.
 Hitchcock, A. L., Plainville.
 Hitchcock, L. R., Watertown.
 Hollister, A. T., So. Glastonbury.
 Hollister, Geo. A., Hockanum.
 Hollister, G. H., Storrs.
 Hollister, Kirkland, South Glastonbury.
 Hollister, Milton D., East Glastonbury.
 Hollister, Orrin C., Manchester.
 Hollister, S. P., Storrs.
 Holt, Joseph E., Chester.
 Hopson, G. A., Wallingford.
 Hornbeck, H. F., Chester.
 Horton, F. N., New Canaan.
 Hotchkiss, B. S., Waterbury.
 Hotchkiss, Chas. M., Cheshire.
 Hotchkiss, Chas. T., West Cheshire.
 Hotchkiss, William, Bristol.
 Hough, E. J., Wallingford, R. F. D.
 Hough, Eli S., Colchester.
 Hough, George E., Wallingford, R. F. D.
 Hough, Joel R., Wallingford.
 Houston, J. R., Mansfield Depot.
 Howard, Alvarado, Stafford Springs.
 Howe, Louis W., So. Glastonbury.
 Howland, Isaac, Brooklyn, N. Y.
 Hoyt, Chas. W., New Haven.
 Hoyt, Edwin, New Canaan.
 Hoyt, James, New Canaan.
 Hoyt, Stephen, New Canaan.
 Hubbard, Clement S., Higganum.
 Hubbard, Elmer S., Higganum.
 Hubbard, Frank C., Middletown.
 Hubbard, John B., Guilford.
 Hubbard, J. M., Middletown.
 Hubbard, Robert, Middletown.
 Hull, James, Durham.
 Hunt, W. W., Hartford.
 Hurlburt, Henry A., Jr., Wilton.
 Huss, J. F., Hartford.
 Hutchinson, E. L., Andover.
 Innis, A. C., Berlin, R. F. D.
 Ives, E. M., Meriden.
 Ives, J. L., South Meriden.
 Jackson, Elmer, Wilton.
 *Jackson, Geo. O., Norwich.
 Jackson, J. C., Norwalk, R. D. No. 42.
 Jarvis, Chas. M., Berlin.
 Jenkins, Dr. E. H., Experiment Station New Haven.
 Jennings, E. G., R. D. No. 1, Bridgeport.
 Jennison, E. F., Hartford.
 Jerome, F. M., New Britain.
 Jewell, Harvey, Cromwell.
 Jewell, Mrs. Harvey, Cromwell.
 Johnson, Dr. F. E., Mansfield Depot.
 Kelley, Edward, New Canaan.
 Kelsey, Charles B., Hartford.
 Kelsey, David S., West Hartford.
 Kelsey, Frederick, Higganum.
 Kelsey, James H., Middletown.
 Kenney, J. P., Hockanum.
 Killam, Edw., Thompsonville.
 Kingsbury, Andrew, Rockville, R. D. No. 2.
 Kingsbury, John E., Rockville.
 King, Horace, Thompsonville.

- King, Mrs. J. E., Rockville.
 King, N. N., R. D. Suffield.
 Kinney, Chas. A., Meriden.
 Kirkham, John S., Newington.
 Knapp, M. C., Danbury.
 Knowles, Wm. A., Middletown.
 Lang, C. E., Winsted, R. F. D.
 No. 2.
 Lapsley, Arthur B., Pomfret Center.
 *Lathrop, E. B., Rockville, R. D.
 Latimer, W. R., Bloomfield.
 Lee, Wm. H., Guilford.
 Leete, A. Minor, Leete's Island.
 Lewis, Frederick J., Highwood.
 Lewis, H. D., Annandale, N. Y.
 *Liegey, Chas., R. D. No. 1, Berlin.
 Loomis, John, So. Manchester.
 Lord, J. W., Warehouse Point.
 Loverin, D. P., Huntington.
 Lowrey, H. P., Whigville.
 Lowrey, L. L., Bristol.
 Lowrey, Mrs. L. L., Bristol, R. D. No. 1.
 Lucchini, Victor E., Meriden.
 Lummis, Geo. E., Southington.
 Lupton, S. L., Winchester, Va.
 Lyman, C. E., Middlefield.
 Manchester, E., Bristol.
 Manchester, E. F., Bristol.
 Manchester, George C., Bristol.
 Manchester, H. G., Winsted.
 Mansfield, Peter, W. Hartford.
 Mansfield, R. M., Wallingford.
 Mansfield, Wm. H., W. Hartford.
 Marshall, Joseph, Seymour.
 Martin, J. A., Wallingford.
 Martin, W. B., Rockville.
 Mason, H. H., Farmington.
 Mason, W. S., Farmington.
 Mathews, E. A., Bristol, R. F. D.
 D.
 Maxwell, Francis T., Rockville.
 May, W. B., Hartford.
 McCall, E. H., Leonard's Bridge.
 McCormack, Samuel, Waterbury, 1063 North Main St.
 McCormack, Wm., Wolcott.
 McKay, W. L., Geneva, N. Y.
 McLean, A. D., Wallingford, 728 Main St.
 McLean, J. O., So. Glastonbury.
 Mead, L. H., Hartford, 272 Westland St.
 Mead, Seaman, Greenwich.
 Merriman, J. H., Southington.
 Mexcur, George, Bloomfield.
 Miles, H. C. C., Milford.
 Miller, C. H., Berlin.
 Miller, F. B., Bloomfield.
 Mills, D. E., Bristol.
 Mills, Geo. E., Farmington.
 Minor, Geo. N., Bristol.
 Mirramant, Mrs. Jos., Meriden, No. Broad St.
 Mitchell, Herbert E., So. Manchester.
 Molumphy, J. T., Berlin.
 Molumphy, Thos. J., Berlin.
 Moore, Charles, Southington.
 Moore, R. A., Kensington.
 Morgan, Samuel W., Wethersfield.
 Morgan, Timothy, Huntington, L. I.
 Morris, Chas. G., New Haven, 139 Orange St.
 Morse, H. C., Wallingford.
 Morton, E. G., East Windsor.
 Moses, A. A., Unionville.
 Mosley, A. W., Glastonbury.
 Moss, J. W., West Cheshire.
 Moss, Julius, West Cheshire.
 Mueller, C. J., Berlin.
 Mulford, Walter, Experiment Station, New Haven.
 Munson, W. A., Huntington, Mass.
 Munson, R. A., Highwood, Station 4.
 Nettleton, H. I., Durham.
 Newton, J. P., Saybrook.
 Noble, H. C., New Britain.
 Noble, John B., Hartford.
 Norton, A. F., New Britain.
 Norton, Geo. B., Berlin.
 Norton, John, Kensington.
 O'Brien, Jas. B., Sandy Hook, R. F. D. No. 17.
 Paddock, J. H., Wallingford, East Main St.
 Palmer, J. B., Norwich.
 Paradise, J. G., Newington.
 Parker, G. A., Hartford.
 Parker, John B., Jr., Poquonock.
 Patten, D. W., Clintonville.
 Patterson, B. C., Torrington.
 Pauley, Geo. A., New Canaan.
 Payne, Frank C., Portland.
 Payne, George K., Portland.
 Payne, Lyman, Portland.

- Pease, B. F., Fairfield, R. F. D.
 Pease, C. P., Ellington.
 Pease, Simeon, Fairfield, R. F. D.
 Peck, B. A., Bristol.
 *Peck, A. C., West Cheshire.
 Peck, Chas. E., Cheshire.
 Peck, James S., Westville.
 Peck, S. M., Woodbridge.
 Pengeot, E. P., West Cheshire.
 Pero, Louis, So. Glastonbury.
 Perry, Chas. M., Southbury.
 Perry, F. L., 302 Park St., Bridgeport.
 Phelps, A. H., Clinton.
 Phelps, Chas. S., Chapinville.
 Phelps, E. J., Enfield.
 Phelps, Mrs. E. J., Enfield.
 Phillips, Alan, Farmington.
 Pierpont, A. B., Waterbury.
 Pierpont, A. J., Waterbury.
 Pierpont, W. L., Waterbury.
 Plant, A. B., Branford.
 Plant, Albert E., Branford.
 Platt, Frank N., Milford.
 Platt, G. F., Milford.
 *Platt, John R., Prospect.
 Platt, N. D., Milford.
 Platt, N. S., 395 Whalley ave., New Haven.
 Platt, William F., Milford.
 Plumb, David M., Prospect.
 Pomeroy, C. B., Jr., Willimantic.
 Pomeroy, E., Windsor.
 Porter, Marshall, Hebron.
 Post, Prichard E., Essex.
 Potter, H. F., North Haven.
 Powell, E. C., Springfield, Mass.
 Prann, W. J., Centerbrook.
 Putnam, J. H., Litchfield.
 Pyatt, Chas. S., Unionville.
 Race, R. H., North Egremont, Mass.
 Rae, James S., New Canaan.
 Rice, J. L., Ludlow, Mass., R. F. D.
 Rice, W. B., Meriden.
 Rich, H. E., East Hampton.
 Risley, Chas. H., Berlin.
 Roberts, Earl C., Middletown, R. F. D. No. 2.
 Roberts, E. J., Middletown.
 Roberts, Geo. A., Milford.
 Roberts, S. W., Middletown.
 Robertson, L. J., Manchester Green.
 Rogers, E., New Britain.
 Rogers, F. D., Monson, Mass.
 Root, L. C., Farmington.
 Root, T. H., Farmington.
 Root, Thos. P., Barre, Mass.
 Ruedlinger, C. N., Hartford.
 Rugg, J. H., Stratford.
 Russell, Dr. Gurdon W., Hartford.
 Russell, S., Jr., Middletown.
 Sage, C. H., East Canaan.
 Sanderson, Lucien, New Haven.
 Saunders, A. W., Forestville.
 Savage, Clarence H., Storrs.
 Savage, H. E., R. D. Berlin.
 Savage, Theo. M., Berlin.
 Savage, Willis I., Berlin.
 Schmidt, E., New Canaan.
 Schneider, Herman, New Canaan, Box 260.
 Schwink, J. G., Meriden.
 Scranton, Charles W., Box 234, New Haven.
 Sedgwick, Harry, Falls Village, R. F. D.
 Seeley, Edward R., Bridgeport, R. F. D.
 Seymour, W. H., Hartford, 126 Garden St.
 Sharp, A. G., Richmond, Mass.
 Shea, J. O., Cannon.
 Shedd, G. V., Preston.
 Sheldon, F. J., Enfield.
 Shepardson, W. M., Middlebury.
 Shepperd, W. S., Shaker Station.
 Sherwood, N. H., Southport.
 Silliman, J. F., New Canaan.
 Simpson, W. A., Wallingford.
 Skinner, M. G., Higganum.
 Slattry, Dr. M. D., New Haven, 352 Howard Ave.
 Smart, Geo. W., Silver Lane.
 Smith, G. W., Box 38, Hartford.
 Smith, H. P., North Haven.
 Smith, J. B., Berlin.
 Smith, J. Elliot, Wolfville, Nova Scotia.
 Smith, Joseph, West Cheshire.
 Smith, Dr. L. A., Higganum.
 Smith, L. P., Lebanon.
 Spicer, G. W., Deep River.
 Spletstoeszer, Herman, R. D. No. 2, New Britain.
 Sprague, W. B., Andover.
 Squires, Chas. L., Branford.
 Staples, G. W., Hartford.

- Steele, Chas. E., New Britain,
Box 702.
Steele, Sumner W., Hartford,
41 Washington St.
Sterling, S. P., Lyme, R. F. D.
Sternberg, Max R., Meriden,
Johnson Ave.
Sternberg, A. C., W. Hartford.
Stevens, H. C., East Canaan.
Stevens, J. C., East Canaan.
Stevens, N. S., East Canaan.
Stevens, W. W., Clintonville.
Stimson, Rufus W., Storrs.
Stirling, J. C., Rockville.
Stokes, E. B., Westbrook.
Stockwell, S. T., West Simsbury.
Stone, Mrs. C. A., Vernon Center.
Stone, D. E., Cheshire.
Stoughton, Lemuel, East Windsor Hill.
Strumpf, George, Burnside.
Summer, J. White, Bolton.
Talcott, Mrs. H. K., Rockville.
Talcott, Phineas, Rockville,
Box 1166.
Taplin, Alvin, Forestville.
Taylor, Arthur W., Greens Farms.
Taylor, Edward J., Southport.
Teed, George E., Weatogue.
Terrell, C. L., Cheshire.
Thomas, T. L., Forestville.
Thomas, W. T., Groton.
Thomas, Wilbert H., Highwood.
Thompson, Chas. A., Melrose.
Thompson, C. H., Berlin.
Thompson, Chas. J., Berlin.
Thompson, John, Ellington.
Thompson, Wm. H., East Had-
dam.
Thomson, Paul, W. Hartford.
Tillinghast, G. G., Vernon.
Tillotson, H. D., West Hart-
ford.
Todd, E. A., Waterbury.
Todd, Miss L. M., Andover.
Trask, Abner, Silver Lane.
Trask, W. W., Silver Lane.
Tucker, F. E., Vernon.
Tucker, Geo. A., West Cheshire.
Tucker, Henry V., Middletown.
Turney, Oliver, Fairfield.
Tuttle, A. J., East Haven.
Tyler, W. M., Waterbury.
Usher, R. C., Plainville.
Vibberts, L. A., New Britain.
Wakelee, G. M., Shelton.
Wakeman, H. S., Saugatuck.
Waite, Ernest H., Cobalt.
Wakeman, J. S., Saugatuck.
Wakeman, L. P., Greens Farms.
Wakeman, S. B., Saugatuck.
Walden, B. H., Experiment Sta-
tion, New Haven.
Waldo, Gerald, Scotland.
Waldo, Harold B., Naubuc.
Wallace, Edgar G., Prospect.
Wallace, E. J., Wallingford,
West Quinipiac St.
Waller, W. E., R. D., Chestnut
Hill, Bridgeport.
Wander, Eugene A., Hartford.
Warncke, Louis H., Cannon
Station.
Warner, E. C., Clintonville.
Warren, Fred, Willimantic, R.
F. D.
Watrous, J. L., Meriden.
Weber, Alfred, Hartford.
Webster, Daniel, Berlin.
Webster, George, Jr., Rockville.
Webster, Mrs. Geo. Jr., Rock-
ville.
Welch, G. H., Torrington.
Wells, Dudley, Wethersfield.
Wells, Dudley 2d, Wethersfield.
Wells, Herbert C., Warehouse
Point.
*Wells, L. J., South Woodstock.
*Wells, L. S., New Britain.
Wells, S. M., Newington.
Welton, Ard, Plymouth.
Welton, E. B., Tracy.
Welton, Mrs. H. L., Waterville.
Werking, Adolph, Plantsville.
West, S. B., Columbia.
Wheeler, W. J., Worcester,
Mass.
White, Edgar D., Andover.
White, W. R., Vernon.
Whitham, Chas. H., Southington
Whitham, Wm., Southington
Whitney, Howard R., Southing-
ton, Box 50.
Whittlesey, J. M., Morris.
Wilcox, Fred, Bristol.
Wilcox, R. C. & Sons, Guilford.
Wilcox, W. E., Meriden.
Wilder, F. W., Watertown.
Willard, S. F., Wethersfield.
Williams, A. W., New Britain.
Williams Mfg. Co., Northamp-
ton, Mass.

*Deceased.

Williams, N. G., Brooklyn.	Woodruff, R. H., Guilford.
Wilson, Samuel, Wolcott.	Wright, A. M., Centerbrook.
Wilson, Thos., New Canaan.	Wright, E. H., Clinton.
Wolcott, R. R., Wethersfield.	Wright, John L., Middletown,
Wood, G. P., Ellington.	342 Main St.
Wood, O. S., Ellington.	Wright, W. O., Clinton.
Woodbury, S. J., Cheshire.	Yale, A. C., Meriden.
Woodhouse, S. N., Wethersfield.	Yale, Allan R., Meriden.
Wooding, M. N., Hamden.	Yale, C. E., Yalesville.
Woodruff, Dwight, Plymouth.	Young, C. O., Yalesville.

